The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees.

VOL. XXXIX. CHICAGO, ILLINOIS, OCTOBER 18, 1902. No. 16.

Original Articles.

LOW LATERAL PHARYNGOTOMY.

FOR APPROACH TO THE LOWER PORTION OF THE PHARYNX, UPPER PORTION OF THE ESOPHAGUS AND POSTERIOR SURFACE OF THE LARYNX, WITH AN ILLUSTRATIVE CASE.*

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The operation of low lateral pharyngotomy for the purpose of reaching the lower part of the pharynx, the upper part of the esophagus and the posterior aspect of the larynx, is not a novel procedure except in so far as may relate to the larynx itself.

AN ILLUSTRATIVE CASE.

In the instance of the case in question, the patient, about 45 years of age, had suffered for many months with a tumor located apparently at the lower part of the pharynx, so low, in fact, that it could be seen only with the aid of a laryngoscope and could be felt at its upper aspect with the index finger introduced through the mouth only with much difficulty. The distance from the upper incisor teeth to the tumor was five and a half inches. The growth appeared to fill the entire pharynx at that situation, although the finger could be swept around the upper part very easily. However, at a distance of six inches from the incisor teeth the end of the finger, when thus swept, came in contact at the right border of the pharynx with an apparent attachment of the tumor to that aspect of the pharyngeal wall. The morbid growth was smooth and soft to the touch, evidently fixed in position, and had been regarded of a fibro-cystic structure. No external appearances suggested the existence of the growth or of its nature, and only a point of tenderness at the right side just behind the thyroid cartilage could be elicited on deep pressure. The patient could breathe readily except when in the recumbent position and during sound slumber, then the presence of obstruction, characterized by obstructive stertor and difficult breathing, were prominent. The patient could swallow all kinds of food, without any other evidence of interference than that manifested by turning the head aside a bit and involuntarily extending it, movements not entirely foreign to those noticed with deglutition in fowls.

Inasmuch as local treatment had in no manner been followed by benefit and the increasing size of the growth suggested the probability of early and dire complications of the functions of respiration and deglutition, harsher measures of practice were suggested to the patient. With this object in view I was requested by Prof. F. H. Bosworth to join with him in determining upon a final means of relief. Accordingly, it was determined that only direct removal would suffice, and low lateral pharyngotomy at the right, for obvious reasons, was selected as the best means of approach to the growth. It was deemed wise to direct the lower portion of the incision so as to correspond to the site of the supposed attachment of the morbid growth to the lateral wall of the pharynx, thus enabling one to clearly define the important characteristics of the tumor and the best means of removing it, i. e., by enucleation, the hot loop, or by ligature or division of the pedicle.

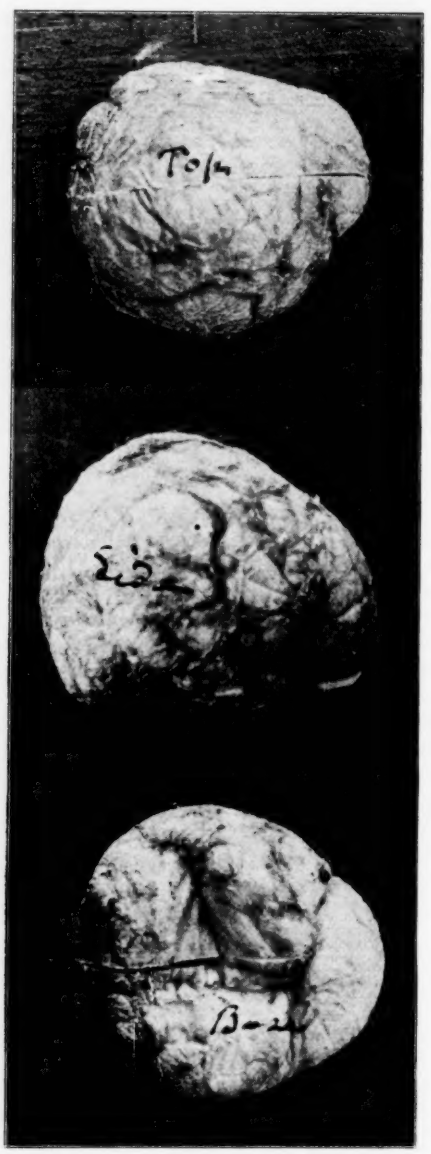
With the head and shoulders well elevated to facilitate respiration, the patient was anesthetized with chloroform by Dr. Bennett. The approach of profound anesthesia was promptly attended with such a degree of respiratory obstruction as to require the employment of a trachea tube, which, in this instance, was introduced into the larynx in order to limit as much as possible the capacity of the space above the tube, thus minimizing the amount of blood that might enter the larynx in spite of packing should much bleeding attend the removal of the growth. As might be expected, the introduction of the trachea tube rendered quiescent the operation field and permitted placing the patient in all respects to suit the requirements of the occasion. I was assisted in the operation by my colleague, Dr. George D. Stewart.

DETAILS OF THE OPERATION.

After the introduction of the trachea tube the head was turned strongly to the opposite side and an incision made from a point about an inch below the body of the jaw, in a line corresponding to the posterior border of the thyroid cartilage, through the integument superficial fasciæ and platysma, to a point a little below the cricoid cartilage. The borders of the incision were drawn apart and held by means of traction loops, and the left greater cornu of the hyoid bone was firmly pressed to the right, thus bringing into prominence the right greater cornu, which was then seized with a tenaculum and drawn firmly upward and held, thereby increasing the open space below it and immobilizing the cornu, thus placing on the stretch and making prominent the part of the inferior constrictor at the floor of the incision, the thyro-hyoid muscle at the outer border and also the portion of the thyro-hyoid membrane immediately below the greater cornu, as well as the contiguous borders of adjacent muscles. It seems proper to note at this time that the external and internal branches of the superior laryngeal nerve are the only nerve structures of special significance that are reasonably exposed

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. H. O. Walker, A. J. Ochsner and DeForest Willard.

to danger from proper operative advance through this incision. The external branch is intimately associated with the part of the inferior constrictor muscle most concerned in the operation, lying upon, sometimes piercing, its lower part, perhaps passing quite transversely across, then again nearly vertically downward upon it. However, inasmuch as this nerve can be easily seen in the great majority of instances, it can be readily avoided. The internal branch passes beneath the thyro-hyoid muscle with the superior laryngeal artery, between the



Growth removed from posterior aspect of larynx by low subhyoid lateral pharyngotomy. April 25, 1902; patient discharged May 14, 1902. Weight, 425 gr.; diameters, 1¾x1¾x1½ inches. Photograph taken after preparation in formalin.

greater cornu and the thyroid cartilage, and pierces the thyro-hyoid membrane, going to its distribution. Often the superior thyroid vein, and sometimes the middle, lies in the way. In this instance a careful examination of the floor of the operation field disclosed the external laryngeal nerve lying quite vertically along the inferior constrictor, with the superior thyroid vein lying transversely somewhat higher up. The former was raised, pulled aside and held, the latter tied between two ligatures and pushed aside. A half-inch incision was then made through the thyrohyoid membrane, just below the greater cornu, avoiding the internal branch of the laryngeal nerve and the attendant artery, into the pharynx.

Through this opening the index finger was carefully introduced and the tumor lying in front was closely examined. It extended from side to side, encroaching more pronouncedly upon the right, was quite immovable and appeared to be located immediately posteriorly to the larynx and firmly attached to it. It was at once evident that it could not be entirely removed by cold or hot snaring, and therefore removal by enucleation was next considered. The incision into the pharynx was extended downward to opposite the point of supposed attachment of the growth to the wall of the pharynx, already mentioned, thus exposing the right side of the tumor with the mucous membrane reflected above it. Through this opening the index finger was introduced between the tumor and the reflected membrane, and with patient though somewhat rigorous caution the tumor was completely enucleated, leaving intact the entire membranous envelope, a fact quickly proven by introducing into the sac fluid from which none escaped, except at the point of its entrance. The enucleation showed that the growth apparently began at the right side of the posterior surface of the cricoid cartilage and increasing gradually in size had remained covered with the expanding overlying mucous membrane of its inception, becoming attached as it increased to the posterior surfaces of the arytenoid cartilages and the intervening structures. The right half of the growth was so firmly held in position by the right ala of the thyroid cartilage that it was necessary to divide with scissors the ala at a point just internal to the junction of its cornu before the growth could be raised from its bed.

Only trifling hemorrhage ensued during the operation. The opening into the pharynx was closed with two rows of fine interrupted chromicized catgut sutures, substantially similar to the manner of intestinal sewing. The superimposed structures were closed successively by buried catgut and superficial silkworm-gut sutures. A textile fabric drainage agent was introduced into the sac left after removal of the tumor, and the remaining portion of the external wound was lightly packed with gauze. The borders of the divided cartilage were closely united with a chromicized catgut suture. The direct pharyngeal portion of the wound healed promptly. The sac was treated by drainage and gentle washing with a small syringe. At the end of the third day a limited portion of the fluid injected into the sac entered the pharynx through a small opening at the lower part, caused, no doubt, by sloughing, since the foul odor of the breath suggested this process. Had the opening been at the upper part of the sac, it is believed that alimentary substances would have entered the sac, and from there passed through the external wound. On the fifth day fluid injected into the sac likewise entered the larynx, causing evidences of strangling. No doubt limited sloughing of the anterior wall of the sac happened about this time. However, care in washing prevented unpleasant results from this cause. The sac rapidly became obliterated and the external wound substantially closed at the end of nineteen days, when the patient returned to his home.

During the first three days after the operation the patient was nourished by the bowel, only water in small amounts being administered by the mouth; after this time fluid alimentation was given by the mouth till the end of the week, when a mixed diet was freely taken.

A sharp attack of follicular tonsillitis during the first week was the only incident of an otherwise uneventful recovery.

The tumor on removal weighed 425 grains and was 1⅞x1¾x1½ inches in its antero-posterior, vertical and transverse diameters respectively. It appeared to have been entirely removed. Muscular fibers were found in the structure, giving rise to the surmise that it must have originated in muscular tissue, probably of the right side of the larynx, invading in a degree the muscles and perhaps the nervous supply of the right arytenoid cartilage, since following the removal for a time the right vocal cord and its arytenoid cartilage were motionless.

CASES REPORTED IN THE LITERATURE.

Examination of the literature on this subject by Dr. H. A. Haubold gives the following result: The first authentic case of low lateral pharyngotomy was done by Cocks of England in 1856, for removal of a false-tooth plate. The next one was done in 1875 by Wheeler of Dublin, for the removal of a needle from the pharynx. This operation involved only the making of a small hole in the pharynx. Justi of Germany, in 1882, made a low lateral pharyngotomy for removal of a plum pit from the pharynx, but found it necessary to supplement it by a subhyoid incision to remove the offending agent. In 1884 Wheeler removed successfully a spindle-celled sarcoma the size of a small egg from the pyriform sinus of the pharynx by means of a low lateral pharyngotomy. Wheeler's case is therefore the first in which a neoplasm has been removed from the pharynx in this way. In 1886 Wheeler also excised a diverticulum of the pharynx by an incision for low lateral pharyngotomy and the patient recovered. This makes a total of five previous cases, all of which recovered.

The author's case appears, according to the above, to be the first case of removal of tumor from the larynx by the means of low lateral pharyngotomy.

DISCUSSION.

DR. DUDLEY P. ALLEN, Cleveland—I have operated on one case in the same manner as Dr. Bryant. There was a pedunculated tumor on the left side of the pharynx, which could be distinctly brought into view by opening the mouth and depressing the tongue as far as possible. I reached it in the same way as Dr. Bryant and removed it in a very satisfactory manner and afterward closed the mucous membrane of the pharynx with a running chromicized catgut suture, using drainage for the external wound. The patient did thoroughly well for a number of days, but at the end of that time developed a pneumonia and died. This was probably to be attributed to the fact that during the administration of the anesthetic the tumor seriously impeded respiration and very likely was the indirect cause of the inhalation of material into the respiratory passages. The moment the pharynx was opened and the tumor was seized and drawn outward the embarrassment to respiration ceased, and no blood whatever escaped into the pharynx. I was very much pleased with the access which the method of operating gave to the lower portion of the pharynx and the posterior surface of the larynx.

DR. JOSEPH RANSOHOFF, Cincinnati—I would like to present an *x*-ray picture of a foreign body in the upper part of the esophagus. Dr. Keene had one case and this is the second, taken from a child about twenty months old. The operation was not done until two weeks after the jackstone had found lodgment. It had perforated the wall in two places. Dr. Bryant's case is very interesting. The lower part of the pharynx is more difficult to deal with than is the esophagus. I would like to ask one question: There is an operation which is not new, known as the subhyoidean pharyngotomy. I have done it on the cadaver only, but I should think it would be admirably adapted for such a case as Dr. Bryant's. I would like to know if it could have been done in this case, as, if so, manipulation in this dangerous region would have been avoided.

DR. R. H. M. DAWBARN, New York—I have had a case somewhat similar to that of Dr. Bryant, which in several respects was very interesting, but I made an anatomic error during the operation itself. The patient had swallowed a partial set of artificial teeth while laughing. I tried to remove it through the mouth but failed and then did a low pharyngotomy. During the operation I thought I felt the plate, but on proceeding further I found I was mistaken. I had taken the free posterior edge of the thyroid cartilage for the plate, an error which it is very easy to make. Then I used a large male sound down the pharynx, and this showed the plate to be lodged high in the esophagus, whence it was removed through the pharyngeal incision. As to the after-treatment, I believe all textbooks have advocated not endeavoring to sew up the wound in esophagus or pharynx, but simply to pack. In this case, however, I carried out what I thought was a good surgical principle, i. e., to put the operated part at rest. I sewed the pharynx with a double row of the finest chromicized catgut and at the end of a week I sewed up the external wound, which had been packed with gauze until then. The patient did not even swallow water for a fortnight after the operation, thus avoiding all tension on the sutures in the gullet. It is only a question of care for us to give food and drink to our patients for any length of time without using the stomach. I have artificially fed several patients for months, partly by the colon and partly by the skin. I used chiefly peptonized milk by the colon (sigmoid). Also, four times in twenty hours the patient was fed through the skin by inunction with very hot oil. I have ascertained that a larger amount of animal oil will be absorbed than of vegetable oil. It is best to precede the hot oil inunctions with bathing and vigorous rubbing with a coarse towel. Much more oil can be absorbed through a congested skin than through a pale, anemic skin. After an hour's vigorous massage with hot oil, from four to six ounces will be absorbed. On the whole, I prefer hot, melted goose grease to other oils; though melted fresh butter will do almost as well; and this is approximately true of several kinds of hot sweet oil (vegetable oils).

DR. EMMET RIXFORD, San Francisco—I had occasion to use a similar incision recently for the removal of an epithelioma of the upper portion of the esophagus. The tumor was just out of reach of the finger at the level of the cricoid cartilage and the constriction so great that the patient was in a condition of starvation. Dr. Bryant spoke of the free access the incision gave to the larynx and in my case I found it possible to dissect the tumor off the posterior wall of the larynx exposing and freeing both recurrent laryngeal nerves. In making the incision I found great assistance in a bougie passed down to the stricture. In attempting to attach the upper end of the severed esophagus a serious complication set in of hiccoughs which tugged strongly on the esophagus. In order to reproduce the portion of esophagus removed from behind the larynx I dissected up a flap of mucous membrane from the posterior wall of the pharynx and turned it down, attaching it to the upper end of the esophagus, thereby establishing a continuity of epithelium. The incision which I called a lateral esophagotomy, but which was in reality a low lateral pharyngotomy, much as described by Dr. Bryant, gave excellent access to this region. There was some difficulty experienced in preventing saliva and blood from entering the larynx, but judicious distribution of gauze tampons sufficed. Paralysis of the left vocal cord ensued, but disappeared after some three weeks. The wound healed readily, though, of course, with suppuration. The patient is now able to swallow solid food though liquids cause coughing. A bougie about the size of one's finger is passed daily to prevent cicatricial stenosis. The operation was done too recently to warrant any statement as to recurrence.

DR. E. L. SHURLY, Detroit—I have recently removed a somewhat larger tumor from a similar situation by means of

the snare. There are twenty-five cases or more on record of tumors of this sort and size which have been removed by pharyngotomy or by the mouth. The nature of the growth in my case was like that of an accessory thyroid. I had great difficulty in adjusting the snare, because the tumor had a very broad base, but finally removed it by means of an unusually large strong snare. Most of these tumors can be removed in this way, thus avoiding the difficulties and dangers of an external operation, as well as avoiding a tracheotomy and leaving a bad scar in the neck. I do not know whether it would have been possible to have operated on Dr. Bryant's case with a snare, but it should be done whenever possible. I was interested very much in the case, and the explanation of the method of operation. I wish to make a plea for the avoidance of pharyngotomy when possible.

DR. FRANK J. LUTZ, St. Louis—Besides the anatomic difficulties encountered in doing a subhyoid pharyngotomy the question of anesthesia is one of great importance. Some years ago I called attention to this and stated that the operation could readily be done under local anesthesia. The vital indications in my case were dyspnea and dysphagia. The patient was an old man who was dying for want of nutrition. The tumor was so large that I was afraid to use general anesthesia. Under local infiltration I was enabled to do the dissection without any mishap. I applied a 4 per cent. solution of cocain on the mucous membrane covering the growth and on the pharyngeal surface and under its influence the tumor was very readily enucleated. By the use of local anesthesia you secure the intelligent co-operation of your patient, which is very important. The literature of subhyoidean pharyngotomy is much greater than the author has stated.

DR. GEORGE GOODHUE, Dayton, Ohio—Some six weeks ago I was called to see a man who had performed pharyngotomy upon himself by the anterior route. He hugged the inferior maxillary so closely that he had left below the cut not only the trachea and larynx but the epiglottis. There was tremendous gaping. He had not cut any vessels, except those which had ceased to bleed, but they commenced again on manipulation and had to be ligated. The parts were sewed with catgut, layer by layer, using an interrupted suture. This case demonstrates a large field for operative procedure and leads us to wonder if after all the anterior route would not be preferable to the lateral.

DR. R. F. WEIR, New York—As to the practical treatment afterward in closing up esophageal wounds, I think Dr. Dawbarn is correct in his theory about this. It is a part of the body which can not be kept still. Mucus and saliva will accumulate and must be swallowed. You may close the leakage, but it will probably leak. Hence, in addition to the closure of the pharyngeal or esophageal wound, one should pack thence outward to the skin with something like iodoform gauze in order to prevent leakage. It is sometimes of advantage to use for this a sticky gauze and for this Whitehead's solution is of service. This consists of iodoform dissolved in ether mixed up with the compound tincture of benzoin, which gives to gauze dipped into it the desired adhesiveness.

DR. BRYANT, in closing—At the outset permit me to thank you for the courteous attention exhibited in connection with the consideration of this unusual case. As to the selection of the route of entrance to the pharynx, I had thought that I stated this part of the question as clearly as possible. Whether to seek the removal through an incision made in front or at the side was not clear to me at first, but later, when finding that the growth encroached more on the right than on the left side of the pharynx, it was appreciated that I might be able to define its limits, determine its attachments, and, perhaps remove it through a lateral opening better than from any other aspect of the neck; also, it occurred to me that I might be able to remove it from beneath its mucous membrane covering without impairing the structural integrity of the latter, which could not of course be accomplished by any other line of access. Only a sufficiently large incision was made into the larynx at the upper part of the common incision to enable me to investigate with the index finger the extent of the growth and its probable attachments, which facts were practically ascertained by this means. Extension downwards of this incision exposed to approach the tumor, which was enucleated with the finger, leaving its mucous covering intact. The opening into the pharynx was then closed with two rows of sutures in the manner already stated. The sac was rinsed out with peroxid of hydrogen, found by this means to be intact, was then dressed, and the upper portion of the wound finally closed as already described. From this time the real point of interest seems to me to be whether or not the sac would slough, in part or wholly, or contract into place, leaving only a protuberance which would slowly disappear. It did not occur to me, except in a passing manner, that injury to the carotid vessels might happen, especially since the incision was far removed from them. Only superficial vessels and nerves were involved in the first incision; the profounder ones already enumerated were avoided in the succeeding deeper ones. So far as the sewing is concerned I remember long ago performing an esophagotomy for removal of a campaign button and contrary to the advice of an older surgeon than myself, sewed up with a single row of catgut the opening through the mucous membrane and its immediate superimposed tissue the entire length, leaving unclosed though lightly packed with gauze, the larger part of the superficial wound. In this instance only partial union of the deep tissue ensued, the remainder healing slowly by granulation. However, something was gained by this step in sewing without attending danger, and therefore deep sewing should be considered a proper measure of practice. The drawing upward of the greater cornu of the hyoid bone with a tenaculum or traction loop, serves not only to increase the space beneath it for operative purposes, but also averts the movements of the parts—thereby affording increased opportunity and much comfort in making incisions here for various purposes, and especially in ligating the lingual artery.

I respectfully submit that it does not lie in the power of any man to so apply a hot or cold snare to a growth of this peculiar attachment as to enable him to remove it as promptly and effectively without subsequent annoyance as was done in this case.

THE SYMPTOMATOLOGY OF CALCULOUS RENAL AND URETERAL DISEASE.*

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PHILADELPHIA.

The symptoms in calculous nephritis and ureteritis are seldom commensurate with the gravity of the case, or the size of the calculus. Small calculi are the most dangerous as they threaten the functional life of the kidney, before giving rise to symptoms that suggest their presence. A calculus resting in the calyx or pelvis of the kidney is simply a foreign body. So long as it remains aseptic it can only produce mechanical irritation or obstruction. Such a quiescent aseptic calculus can increase to large proportions before it is suspected.

A number of large calculi that have been found produced only a dull ache in the lumbar region, a slight amount of albumin, and in some a microscopic trace of pus. In some of these cases the condition had lasted for years and had been frequently diagnosed as chronic Bright's disease. The semi-quiescent calculi produce more marked symptoms. They are often adherent to the pelvic mucosa and cause hemorrhages after violent movements. If the blood is sufficient to form clots, they may produce obstructive symptoms and colic. In freely movable calculi the symptoms and size bear a closer relationship. The larger the calculus the less severe

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the symptoms. Obstruction is less liable and they are difficult to detect. Very small calculi, if smooth, may pass almost unnoted. If rough they may produce considerable pain as well as slight hemorrhage.

When the calculi are somewhat larger and enter the ureter they are the most dangerous. They become impacted in the ureter, obstructing or occluding it, and produce a temporary or complete hydronephrosis that may result in unilateral anuria and the functional death of one kidney. When they progress down the ureter, their progression is marked by an intermittent hydronephrosis with a constant dull pain in the lumbar region, accentuated by acute exacerbations or colic attacks, as the calculus is pushed down the ureter. These calculi produce a symptom complex that closely simulates a movable kidney, a twisted ureter or a valvular formation. These various conditions have been frequently found in cases suspected of calculus where a negative diagnosis had been rendered excluding calculi. The time required for these ureteral calculi to pass has varied from a few hours or days, to months.

Such calculi may, however, become impacted in the ureter and give rise to the very grave condition of unilateral anuria. It is impossible to determine the presence of the calculus or of such a condition from the symptoms or urinalysis. After the occlusion, the urine is derived only from the normal kidney. The subsidence of the symptoms is identical, whether the ureter remains occluded and the kidney ceases to act, or the calculus passes unnoted or the urine finds its way past the calculus. The results are entirely different in their gravity. If the calculus is permitted to remain, the kidney will atrophy and any serious involvement of the other kidney will thereafter result in death.

The greatest danger, therefore, lies in permitting such a calculus to remain *undetected* and not removed by surgical intervention, if it is producing complete obstruction. The only way to determine the presence of the calculus is by operation, or by the Roentgen examination. The only way to determine the absence of unilateral anuria is to show that there is present a bilateral urinary flow, either by the cystoscope, the ureteral catheter or the segregator. The simplest and the gravest conditions may be present where there are aseptic calculi that fail to produce sufficient symptoms to determine their presence. The importance of a method that absolutely determines their presence or absence, as soon as suspected, is therefore evident.

When infection is present with the calculus, the symptoms approximate more nearly those classically described as renal colic. Yet any one, or more than one, of these symptoms may be wanting and yet a calculus be present. Thus the symptom complex may approximate or be identical with that of other intranephritic or extranephritic conditions. In fact, this similarity in symptomatology may make a differential diagnosis impossible except by the Roentgen method. The impacted calculus in the right ureter, producing a pyonephrosis, may closely resemble an appendicitis. The distended ureter, if the calculus is impacted just above the iliac vessels, may be mistaken for the swollen appendix. The exquisitely tender ureter over the calculus is close to the position of the inflamed appendix. The increased proportion of ureteral calculi, over sixty per cent., makes it highly probable that this error in diagnosis has been made. With complete impaction there would be no morphologic elements in the urine to aid, while all the systemic symptoms could be produced by the pyonephrosis, even the rigidity of the abdominal wall might be included, caused by a peri-ureteritis and peritonitis.

Recent investigations by Thomas R. Brown show that calculi in infected alkaline urines are probably secondary to the infection and result from the action of bacteria that decompose the urea, forming the phosphates and carbonates of calcium and magnesium of which the calculi are composed. This is undoubtedly true in some cases, but all calculi have their origin in the pelvis or calyces of the kidney, and many large calculi are found in perfectly sterile urines. Infection must in many cases be secondary to calculus formation, though it probably occurs more often in acid than in alkaline urines.

Where a calculous pyelitis is secondary to a cystitis the diagnosis would be very difficult. The cystitis might subside and a chronic pyelitis remain, without sufficient symptoms to make its calculous nature suspected. The persistence of a chronic pyelitis or cystitis should excite the suspicion of calculus and its presence should be eliminated or determined by the Roentgen examination. Two cases that approximate each other very closely in symptomatology will serve to illustrate how difficult the diagnosis sometimes is without the use of the Roentgen rays.

CASE 1.—The first case (No. 32), A. B. D., 33 years old, was referred by Dr. Holman of Pittsburg. He had suffered from nervous prostration for five years. For the last eighteen months he had had acute pain in the left lumbar region. There had been pus in varying quantity in the urine. Sometimes the urine was perfectly normal. There had been no true colic. The urine contained pus, some red blood corpuscles, a slight amount of albumin, no casts and a few oxylate of lime crystals. Inoculations for tubercle gave negative results. There had never been any symptoms of cystitis. The Roentgen examination excluded calculus and the patient was referred for further examination and diagnosis. A sacculated atonic bladder was found containing sixteen ounces of residual urine loaded with pus. The atonic bladder and the lancinating lumbar pains suggested a spinal lesion with prodromal pains. The patient was put on urotropin to clear up the pus and referred to a neurologist. He subsequently developed a paraplegia from which he has partially recovered. This case simulated closely a calculous nephritis but proved to be neuropathic.

CASE 2.—The second case (No. 231), A. G. C., 38 years old, was referred by Dr. R. W. Stewart of Pittsburg. Before coming under his care he had been treated by various physicians, including a neurologist of very high standing, for nervous prostration. His symptoms were lumbar pain, never intense in character, with no colic. A small amount of albumin, a trace of pus and large quantities of uric acid in the urine. The Roentgen examination showed a large calculus that formed a cast of the pelvis and calyces of the kidney. It had to be broken in order to remove it during the operation by Dr. Stewart. The patient has since made a complete recovery.

Of these two cases the first presents the more typical symptom complex of a large renal calculus, while the second had been treated as a spinal lesion of specific character.

Small movable calculi in the infected kidney have symptoms that resemble more closely the typical classical grouping of nephritic colic. The following case illustrates the symptomatology in cases where a small calculus is passing down through the ureter in an acute attack.

CASE 3.—G. V. (No. 226), 38 years old, was referred by Dr. A. H. Goodwin. He had two attacks before the one in which he was examined. They had occurred three and eighteen months previously. The present attack had lasted six days before he was seen and examined by the Roentgen rays at his home. There had been malaise, sleeplessness, dry lips and skin, pulse 100-105 and anorexia. There was constant pain in

the lumbar region and radiating from it, with exacerbations. There was no tympany, no muscular rigidity, no frequent urination. One ounce and a half of urine passed three and one-half hours after the onset of the attack showed acid reaction, yellow color, cloudy, albumin in small amount, a trace of pus, blood in pale discs, 2 hyalin casts in 5 slides, cylindroids plentiful. The urinalyses remained practically the same with a decrease in the blood and pus. The amount passed in the day was 777 c.c. with 16.9 grains of urea. For the first five days morphia had to be given for the pain. The Roentgen examination showed a small calculus in the juxta-vesical portion of the ureter. The calculus was passed five days after its detection. It was a small flattened oval, slightly roughened, of ash-brown color. It weighed 0.096 gm. A chemical analysis showed that it was composed of earthy phosphates and uric acid.

This case illustrates the value of this method of diagnosis and shows that small calculi composed of uric acid and phosphates can be detected with such accuracy as to justify the employment of an expectant line of treatment.

The character of the pain in renal and ureteral involvement in calculous conditions or in any obstructive lesion of the ureter is quite characteristic though not always to be depended on. The dull ache in the lumbar region is produced by a quiescent or semi-quiescent stone. The intense pain or colic, localized in the lumbar or renal region, and radiating from that point down into the testicle, is produced by a large movable calculus that blocks the ureter or a smaller calculus that has just entered it. The calculus that has entered and is passing down the ureter causes by obstructing the flow of urine the distension of the pelvis of the kidney and the ureter. The spasmodic contractions, that result in the pushing onward of the calculus, give rise to exacerbations of pain that are characterized by a tendency to nausea and vomiting when the upper portion of the ureter is involved.

The absorption of toxins from the pent-up pyonephrosis is generally expressed in gastric irritation. In one case (No. 121) of complete occlusion of the ureter, the absence of urinary disturbance and the presence of gastric irritation, led to the demonstration of the patient in a clinic as a case of nervous dyspepsia. Nausea and vomiting are not as constant symptoms when the calculus has passed the iliac vessels and lies in the pelvic portion of the ureter. In its upper portion it is often possible to palpate the distended ureter and elicit exquisite tenderness, "like a toothache," by pressure on the calculus. The pyonephrotic kidney can sometimes be palpated, its intermittent hydronephrotic or pyonephrotic state making the diagnosis of a movable or floating kidney very possible.

The ureteral calculus situated in the pelvic portion of the ureter may present a symptomatology identical with that of calculi higher up. It may present the symptoms of renal calculus only. The pain may be referred to the kidney alone, with no symptom to locate the calculus in the ureter. Or, the symptoms of cystitis or vesical calculus may be presented, with pain referred to the glans penis. The latter symptom is particularly common when the calculus lies in the juxta-vesical portion of the ureter, or when it projects into the bladder. It is not, however, a constant symptom and may be entirely wanting. Here it may also be possible to palpate the calculus by rectal or vaginal examination.

As recently pointed out by Dr. H. H. Young, the examination with the cystoscope and ureteral catheter is particularly serviceable. The ureteral papilla often shows decided changes on the affected side, or a calculus may be seen distending or projecting from the ureteral orifice. The collection of the individual urines and comparative analyses is of great service, as the functional efficiency of each kidney may be determined. The value of careful urinalyses, especially of the individual urines, should not be underestimated. Implicit confidence should not, however, be placed in the findings. The urinalyses from a number of conditions may often present identical characteristics. Bacteriologic analyses often prove of great value, but more often fail in detecting the micro-organism that is responsible for the pathologic condition. The most constant element present in the urinalyses from cases of calculous nephritis or ureteritis has been albumin. This element is so common in all renal inflammations that its presence is hardly more than suggestive. The amount of urea excreted, especially if the comparison is made between the individual urines, is very valuable in establishing the functional efficiency of the individual kidneys. The relative amount of sugar eliminated from the individual kidneys after the hypodermic injection of phlorizin is another new and valuable laboratory test.

The separate urines give an additional value to microscopic examinations, but the traumatism produced in obtaining them makes it impossible to depend on them in estimating the amount of blood. It can only be accurately estimated in the fresh specimen secured without instrumentation. It is found so often in other conditions that its value as a sign of the presence of a calculus has been overestimated.

Pus is an element that can only have diagnostic value when its source is accurately determined by the catheterization of the ureters. It is, however, still a mooted question whether catheterization is justifiable in the presence of infection, especially in the male.

The difficulties in the way of making a differential diagnosis from the symptoms and urinalyses are, therefore, very great, especially when we take into consideration the fact that one or more of these symptoms may be wanting. They are equally great in intranephritic and extranephritic conditions that simulate each other very closely in symptomatology. It is, however, particularly difficult to determine the presence of the smaller calculi, which, as has been shown, are the source of the gravest danger. But all calculi should be detected and removed in their earliest stages, as soon as a suspicion points to their presence. The symptomatology of these earliest stages is too uncertain to base operative procedures upon. Delay is dangerous, while the presence and size of the calculus is still undetermined. Delay is the best treatment, when the exact determination of the size and position of the calculi shows that its passage can be safely awaited by nature's methods. Such exact knowledge removes an element of imminent danger from the patient, and often results in the complete avoidance of all operation.

These deductions are based on the study of 254 cases suspected of calculous conditions that have been referred for the Roentgen diagnosis. In the 73 positive diagnoses calculi were found in the ureter 47 times; 50 cases were in males, 18 in the kidney, 32 in the ureter; 23 cases were in females, 8 in the kidney, 15 in the ureter. In 11 cases bilateral calculi have been found, sometimes both renal and ureteral. Multiple ureteral calculi have been found in 6 cases.

The value and accuracy of the Roentgen method and its superiority to all other methods in determining the presence or absence of calculi in the urinary tract has

been demonstrated beyond a doubt. The variations in symptoms and the frequency with which they are deficient in the early stages render it essential to the safety of patients suspected of renal or ureteral lithiasis that they should be submitted to a Roentgen examination and the presence or absence of all calculi determined.

Such an accurate and absolute diagnosis can not be made until the diagnostician has developed a careful technic. Clinical experience is essential in reading the negatives as well as in making them, and must count in estimating the value of the diagnosis rendered.

112 South Twentieth Street.

INFRAPUBIC SECTION FOR PROSTATECTOMY.*

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CHICAGO.

The operation here described is based on principles somewhat at variance with those now current, and I beg your indulgence if I speak dogmatically while trying to make its features plain. I have to offer as an excuse the good results I have attained and the rather chaotic condition of the whole subject in the literature.

STRUCTURES CONTRIBUTORY TO THE OBSTRUCTION.

We are not accustomed to consider the male pelvic outlet as of surgical importance, but we must now revise our ideas of pathogenesis and treatment of prostatic obstruction if my theories are true, and concede that the bones and ligaments also of the pelvis have much to do with compressing the urethra in prostatics. I contend that unless there is crowding together of the walls of the prostate by outside pressure, enlargement alone will not cause stoppage. That this crowding does take place I will endeavor to show. Were the prostate free to expand, I believe that enlargement of the organ would seldom cause dysuria, as the vesical sphincter is not a part of it. At any rate, many very large prostates have come under my notice, in which there was no retention and no cystitis. A much smaller one, bound tightly against the pubis and subject to lateral pressure, will often give complete obstruction. Of course, the presence or absence of inflammation often determines the question of obstruction in different cases or at different times in the same case. It is not fair, however, to give this too great weight, because there are undoubtedly large numbers of cases constantly obstructed by mechanical causes, only the inflammatory part of the trouble being unimportant. The thesis I wish to defend is this: The prostate, when enlarged by myomata or other cause, like a myomatous uterus, lacks room in the bony pelvis and crowds all the other organs and itself until it obstructs its own lumen.

The prostate sits in a rigid triangle, having one side of ligament and two of bone. It is exceedingly firmly fixed in this narrow box by the short, hard band called the triangular ligament and the two prostate-pubic ligaments. These effectually prevent any backward motion into the looser and wider space behind, except in so far as the ligamentous fibers can stretch. The triangular ligament (lig. transversum pelvis) also forms a perfectly rigid floor on which the organ is firmly seated and through which the urethra perforates, thus establishing, immovably, the position of neck of the bladder, prostate and bulb.

A consideration of these anatomic and pathologic points led me to devise the operation I now advocate. This is a partial prostatectomy, the posterior part of the gland being left in place. It is, however, more than this, as it involves cutting loose the gland from its pubic and lateral ligaments, and partial destruction of the pelvic floor or urogenital diaphragm, with dislocation backward of the whole mass. This means such a radical departure from the old technic that a few words of explanation seem necessary.

DISCUSSION OF THE COMMON ROUTES OF OPERATION.

Of the two routes commonly chosen, suprapubic and perineal, each present various phases that are instructive. After a fair experience with each, I became convinced that certain types of enlargement are better suited to suprapubic prostatectomy, and certain others to the perineal, although I admit that the pre-operative selection is not easy.

An advantage of suprapubic section is remoteness from complex structures about the vesical neck, such as the numerous nerves, vessels and muscles located there,

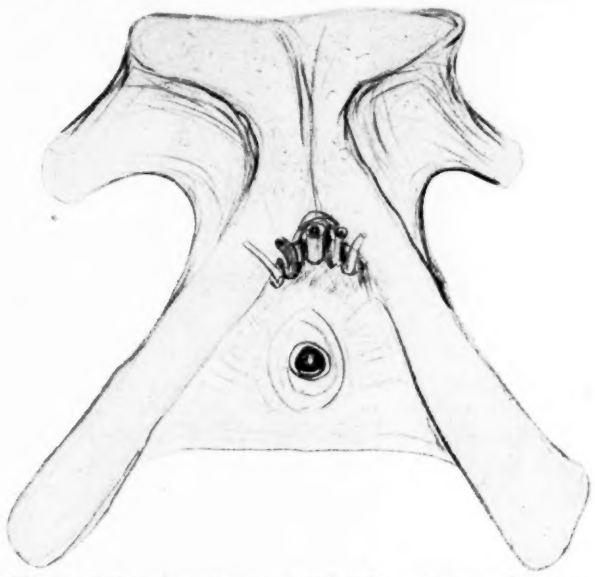

Fig. 1.—Infrapubic section, dorsal vein, arteries and nerves.

deep fascia, pelvic floor, posterior urethra and seminal vesicles and ducts. Incising the fundus of the bladder in Retzius' space is a much less damaging cut. The suprapubic opening also gives more visible field, enables us to detect and remove stones easily, and gives easier route for pedunculated internal lobes. My observation is that emphasizing certain features of the technic makes suprapubic prostatectomy a rather rapid and easy operation. The features are:

1. Use of a larger Barnes' bag than usual, lifting the prostate into a visible position and holding it against the pubic arch.

2. High Trendelenburg position, which seems to cause the prostate to move toward the front still more.

3. Careful incision of the capsule through the bladder wall, turning it off the gland in a flap each side.

4. Bimanual enucleation. The gloved hand or two fingers in the rectum constantly working against the one in the bladder so that the prostate and its myomatous masses are shelled out between them. If items 3 or 4 are neglected, the operation is long and bloody, especially if instruments are used instead of fingers to enucleate.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. H. O. Walker, A. J. Ochsner and DeForest Willard.

Advantages of the perineal route are: More perfect drainage by gravity and tubes. An extravesical operation except for a moderate hole in the prostatic urethra. Preservation of the vesical sphincter function in some cases at once. Dr. Murphy has reported a case in which the bladder held urine at once. It is not uncommon for voluntary urination to begin within a week. Many cases, however, have a slow healing. I have found Dr. Ferguson's retractor a useful instrument.

Disadvantages of both these methods are found in the fact that the urinary tract is laid open with subsequent slow healing and urinary infection of surfaces. This is more dangerous as age advances, and in the presence of kidney lesion and infected bladders, prostatic cases are rarely anything but septic. A certain number of deaths occur suddenly from thrombosis of the prostatic plexus and embolism.

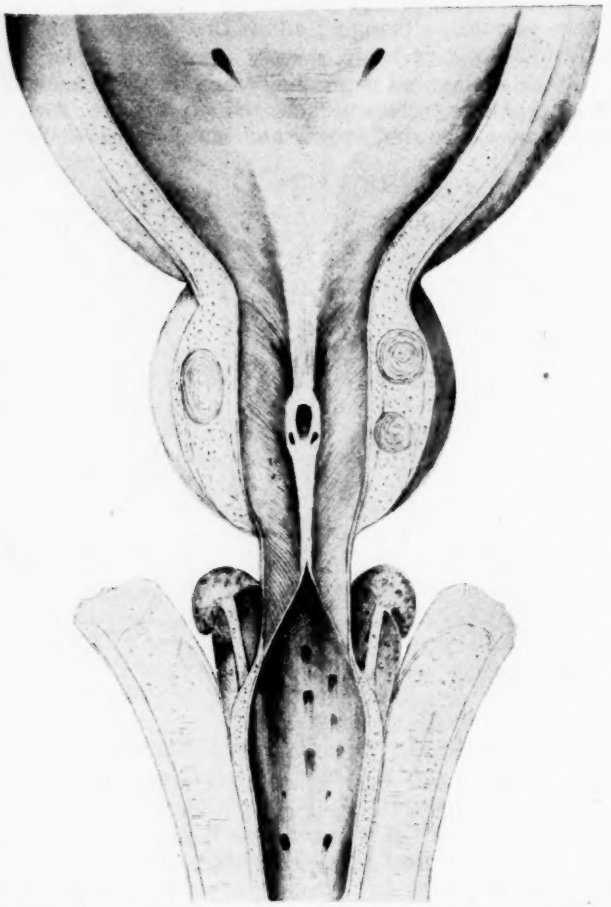

Fig. 2.—Section showing myomata in prostate, utricle and ducts.

The ideal method would leave the urinary tract unopened, and would, therefore, involve no more risk to life than a clean operation, say herniotomy, the removal of a lipoma or any moderate external operation usually called safe in absence of organic disease. There is nothing in our experience to warrant the hope the time will ever come when we will open the bladder as we now do the peritoneum with virtually no risk. Nobody of much experience claims that a long series of cystotomies can be performed without a regular percentage of deaths. If he claims immunity from risk in opening the bladder, even in good subjects, he cannot show any large series of cases to prove it. All the care and antisepsis known have not made lithotomy take the place of lithotrity in percentage of recovery. I have known a number of good operators who thought it was going to do so, judging by the triumphs of antiseptic surgery elsewhere and by a small series of successful cases with careful technic, but each one of these has met later his fair percentage of deaths, and the question stands exactly where it did before. Cutting operations still have the greater mortality, if we may judge from the very extensive reports of the East Indian surgeons, many hundred operations being reported by single individuals.

THE AUTHOR'S INVESTIGATIONS.

If a method of dividing or relieving the prostatic ring entirely from without could be perfected, probably instead of 5 or 10 per cent., the mortality would be less than 1 per cent., and our aged patients would be kept but a few days recumbent as against several weeks by present methods.

I do not think this will ever be done regularly by the perineal route. I have tried as consistently as I know how to accomplish this and have seemed to be very near it in one or two cases, but, after the most careful planning, I have each time opened the prostatic urethra. Everyone else I have seen operate has done the same thing, and I believe it occurs regularly by present methods. There is no way of getting the prostate out, or even divided from the rectal side, without opening the canal because of the rather firm attachments to the verumontanum, and the shape of the urethra, with its utricle and ducts.

The nearest I ever came to doing this was in a large prostate operated on by a long incision extended around the left of the anus to the coccyx, with the patient in the reversed Trendelenburg posture. After separating the rectum from the prostate well up, I could readily palpate and see the whole gland and part of each seminal vesicle. After enucleating both lateral lobes, I cut them away with a piano-wire écraseur, leaving an isthmus, as I supposed, containing the whole urethra. I found in a few moments, however, that there was an opening in the prostatic urethra, and on slight manipulation the middle lobe came out in the form of a round adenoma five-eighths of an inch in diameter. This was the most determined effort I have made to avoid opening the mucous canal, but I may say that I have had it in mind constantly that I would learn to do this somehow and have more or less consistently tried to do it every time I operated. My opinion now is that the thing is impossible when working from the rectal side.

I next considered three other routes which seemed possible, viz.: 1, suprapubic; 2, transpubic by symphysiotomy; 3, infrapubic, i. e., in front of the urethra. The suprapubic barely enables one to touch the prostate before opening the bladder. I experimented in doing ordinary suprapubic cystotomy, and easily found this out. Although the bladder separates very easily from the bone, I do not deem it a safe region to work in because of the dorsal vein and accompanying vessel just underneath the symphysis. These same vessels I encountered from below, but I could there see and avoid cutting them. The transpubic or symphysiotomy route I considered too much in the category of a capital operation.

REASONS FOR PREFERRING THE INFRAPUBIC ROUTE.

Now as to why I advocate the infrapubic cut: If the root of the penis and pubic arch be examined in a thin patient, it will be found that the penis can be drawn aside and flattened against the bone until nearly the whole space is available for an opening. I started with the idea of an incision near the symphysis, a

drawing aside of the two cords and detachment of the penis by severing the pubic attachments. This I tried on a cadaver, thinking I could then draw the neck of the bladder well down and have the prostate quite accessible. I was disappointed to find less access than I had hoped for in the cadaver, and I feared to try it in the living subject on account of danger to the dorsal vein and arteries of the penis.

If, however, the right or left spermatic cord be drawn well forward, an incision about 8 or 10 c.m. long can be made from the symphysis parallel to the right or left ramus of the pubic bone. In this diamond-shaped opening, with the penis held aside by a retractor, are: 1, a space of fat about one-half inch wide; 2, the ligaments attaching the penis to the pubis, and the prostatopubic ligaments between which pass, 3, the crura of the corpora spongiosa each side; 4, a large vein, the dorsal vein of penis with two smaller arteries and two nerves. The fibers of the levator ani muscle, embracing the prostate and the inner surface of the obturator internus, come forward in the lateral part of the field and the deep fascia fills the whole space with a strong covering which must be cut away in front before we get inside the pelvic floor. The internal pudic artery and particularly a large branch to the bulb, must be avoided in doing this.

Fig. 3.—Bladder, prostate and seminal vesicles.

After pushing aside the vessels here encountered and dividing the pubic ligament of the penis, the cutting off of the deep fascia and part of the levator ani allows the membranous urethra and prostate to be pulled into view by traction on the penis. The two prostatic ligaments are now in plain view and are made tense by our traction. They appear to be about 1.5 or 2 cm. long, and if they are both divided close to the prostate the latter will come still further into view. This partial destruction of the pelvic floor is permanent and is of great value in preventing further compression of the prostatic urethra by the grasp of the levator ani. It also makes the bladder prolapse a little so that there is no longer a retroprostatic pouch, but the orifice of the urethra becomes the lowest point.

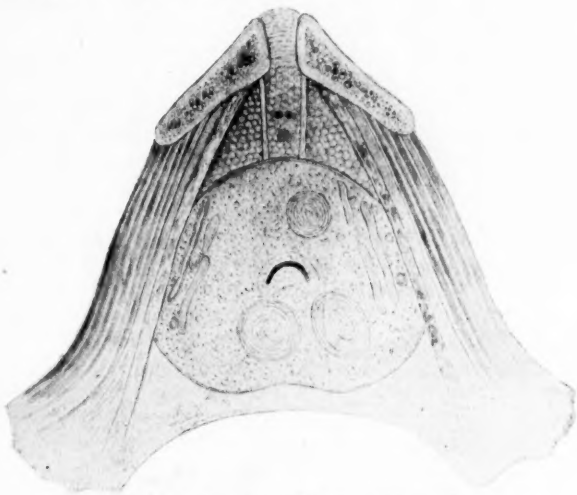

Fig. 4.—Prostate fixed in pubic arch.

The completion of the operation, however, involves attacking the prostate itself and either severing its ring or removing a segment of it in a purely external manner. Unlike the posterior wall, the anterior segment is thin and fairly easy to separate from the mucous tube of the urethra, or at any rate a portion can be cut away without opening it. About one-fifth of the diameter of the gland is anterior to the canal. A large steel sound should now be inserted and a very careful dissection made to identify the urethral canal at its junction with the membranous portion. With a little care this can be done, and when once started the Kocher director can be pushed gently upward and the splitting process continued until the entire ring is divided. In the cadaver operation I was able to turn back rapidly a segment of prostate each side, and then cut off a small piece amounting to one-fourth or one-third of the whole circumference of the prostatic ring. In the living subject I have found a rapid spreading of the split prostate after the cut is made, and the urethra with its sound seems to rise partly out of the mass.

Fig. 5.—Section of myomatous prostate.

I am satisfied that this division alone does much to cure the obstruction, but I cut off a piece each side of the division about 1 cm. wide, and could have enucleated much more in one case, but preferred to take no risk of opening the canal.

I believe now that good results from extensive division of the pelvic floor in front including the anterior attachments of the levator ani. I do all I can to weaken these forward attachments so that the subpubic contents will sag backward and downward into a region where no bony pressure can exist. This can be assisted by divulsing the tissues somewhat in a backward direction.

The levator and fibers embrace the prostate. The latter is normally held in the grip of the muscle and is both lifted and compressed by its contraction. When enlarged, this action becomes exaggerated, as the organ is increased in breadth so that the muscular fibers of the pelvic floor are less parallel as they pass around it, and hence the prostate is much more powerfully squeezed as they contract. The voluntary contraction of this muscle, which ordinarily lifts both the anus and prostate and assists in expulsion, now fails to lift the

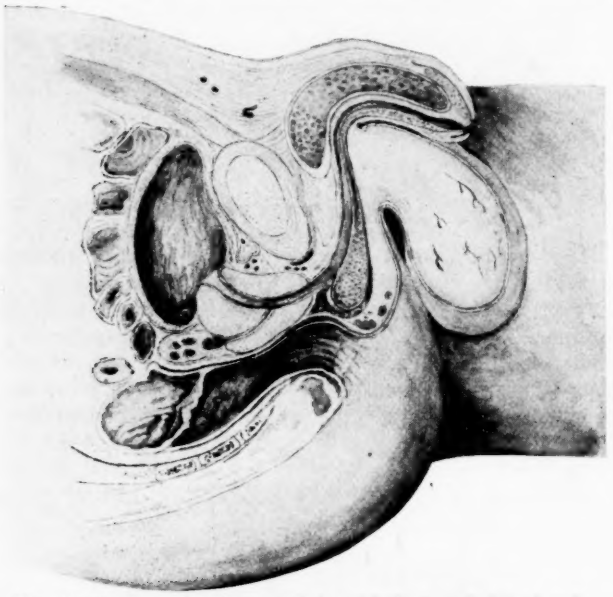

Fig. 6.—Section showing prostate and duct and dorsal vein.

great tumor and only squeezes it tighter together, while at the same time the anus is forced against it. In many cases the result of this is not only to compress the urethra and increase tenesmus, but to cause functional derangement of the anus and rectum, so that patients suffer acutely from rectal tenesmus every time the bladder is strained upon, and also suffer vesical spasm whenever the rectum contracts. This combination of symptoms has probably been met by everyone, and is not confined to cases with cystitis. Patients so affected often think they have piles when in fact no tumors or proctitis are present.

Of course, another element in the rectal disturbance is the backward pressure of the prostatic tumor higher up on the rectal wall, causing much the same symptoms as a retroflexed uterus. The only wonder is that all prostatics do not have this class of symptoms. As a matter of fact a fair minority do have them.

I would if I could divide the levator ani muscle and pelvic fascia enough to allow the pelvic contents to fall very markedly in every prostatic case. I cannot divide them very completely except in front and on one side. The subpubic attachments are, however, pretty well loosened, and this will be found to have relaxed the whole space to some extent. This space is, in fact, very much crowded by the encroachment of the gland, but, as the pelvic outlet is narrow only in front, instead of dropping downward when the tissues are cut, the pelvic organs move backward, or backward and downward. This does not compress the rectum for the very simple reason that the coccyx goes back with the rest as it is released by loosening the levator ani in front. Every half-inch backward the prostate can go brings it into a wider space between the bones, and the general result is a great loosening up of all the structures concerned in pressure on the neck of the bladder.

A backward and downward displacement of the bladder outlet is a very valuable aid to urination, also by abolishing the retroprostatic pouch of the bladder. This pouch forms by the sagging of the posterior wall behind the elevated prostate, which, from its firm anchorage to the pubis, cannot descend. Relieving the

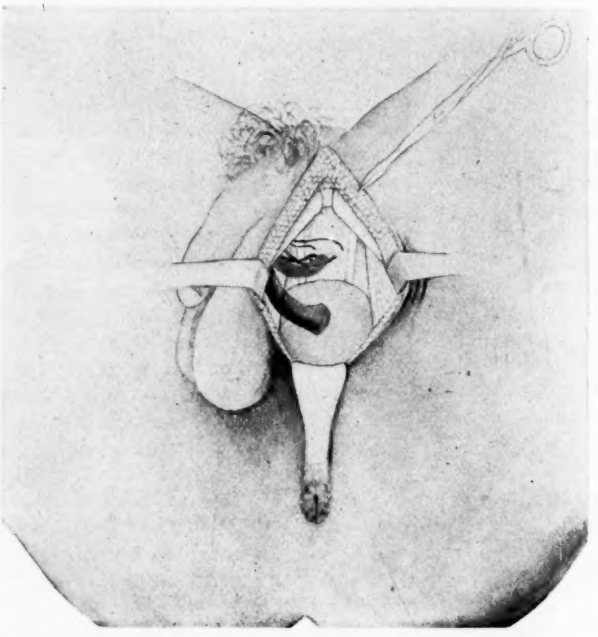

Fig. 7.—Author's incision exposing prostate, two pubo-prostatic ligaments, dorsal vein and arteries.

prostate allows it to become again the lowest point, so that the bas fond is funnel shaped. Another evidence of the value of changing the position of the outlet is the permanent good results sometimes following drainage.

The real value of suprapubic cystotomy is in the effect it has of ventral fixation. This draws up the retroprostatic pouch and even the prostate itself. It fails often of good result because it does not relieve the tension of the pelvic floor. The existence of this pouch is easily demonstrated in some individuals by passing the urine, first in a sitting, then in a standing, and last in a knee-chest or hand-and-knee posture. Certain patients can by this change evacuate a number of ounces more at once with each change of posture.

CONCLUSIONS.

1. The narrowness of the male pelvic outlet becomes surgically important with the overgrown prostate.

2. Overgrowth of prostate does not cause obstruction unless there is also outside pressure.

3. This may come from the ligaments and muscles without the organ actually pressing upon the ischia or from bony pressure.

4. Relieving the prostate from the fixed space behind the pubis allows it to expand and cures the obstruction.

5. This can be done best by an anterior incision and should be accompanied by a cutting of the prostatic ring and removing a segment extra-urethrally.

6. Incidentally the change of position, lowering the bladder outlet, does away with the retroprostatic pouch, and greatly assists natural drainage.

7. The separation of the prostatic and urethral ligaments from the pubis and the weakening of the urogenital diaphragm is not to be avoided, but sought.

(The discussion on the papers of Drs. Leonard, Andrews, Fuller and Munro will follow the papers of the latter two next week.)

THE DISAPPEARANCE OF OPACITIES OF THE CRYSTALLINE LENS.*

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SPONTANEOUS DISAPPEARANCE OF SENILE CATARACT.

In 1900 I reported[13] an interesting case of this nature in a man of 73, who had marked senile changes in his circulatory system as well as prominent muscular and nervous symptoms. Several months before his first visit to me he had an attack, which was at first diagnosed as apoplexy, but later was judged severe cerebral congestion with effusion. His vision had always been satisfactory until a few months before I saw him. He distinctly stated that twenty-five years before a grayish spot came over his pupil, and he became blind in his left eye. He consulted the late Dr. Holmes of Chicago, who diagnosed mature cataract. Operation was deferred on account of the perfect vision of the right eye. Ten years later the cataract had become totally absorbed. At my first examination I found an absolutely aphakic eye with no signs of lens or capsule. The anterior chamber was very deep, and the iris was tremulous and slow to react. The media were perfectly clear, but there were evidences of an old chorioretinitis, with some involvement of the optic nerve. With + 13 D, central vision was 30/40, but in the periphery both the form and color fields were almost obliterated. He had an inconsiderable defect in his right eye, the correction of which gave him 20/20 vision, but here again the fields for form and color were much contracted on the temporal side. In the periphery of the fundus of this eye there were evidences of choroidal disease, but the lens was perfectly clear. The aphakic left eye deviated outward, even when corrected with a convex lens. There was absolutely no history of injury or operation, and the cornea showed no cicatrix. He never remembered having had extreme pain or marked external evidence of inflammation in either eye. On account of the external squint, the limitation to central vision and the great disparity in the refraction of the two eyes, a plane glass only was ordered for the left eye.

Analogous observations have been recorded by Becker, Brettauer, Arlt, von Jaeger, von Hippel, Norris, Czermak, Natanson, Koenig, Warnatz, Steinhoff, Arens, Kipp, Chisholm, Stephenson and others.

Trousseau[22] has recently reported the spontaneous resorption of a cataract in a woman of 55, who had been operated on for a severe attack of glaucoma. Iridectomy was performed on both eyes at the same sitting. A few months later cataract developed in one eye, maturing within three months. Shortly after the cataract began to disappear, and in four months was completely gone. Reuss has recorded a similar case. He collected 33 cases of spontaneous resorption of cataract. In more than 50 per cent. there was some complication; in 7 per cent. glaucoma.

After a careful and thorough digest of the literature of this subject I have classified the reported cases as follows:

1. Cases in which there was absorption after spontaneous rupture of the anterior or posterior capsule.

2. Cases in which there was spontaneous dislocation of the cataractous lens.

3. Cases in which there was intracapsular resorption of the opaque cortex and sinking of the nucleus below the axis of vision, after degenerative changes in Morganian cataract, without rupture of the capsule or dislocation of the lens.

4. Cases in which there was complete spontaneous resorption of both nucleus and cortex, without reported history of ruptured capsule, dislocation or degenerative changes of the Morganian type.

5. Cases of spontaneous disappearance of incipient cataract without degenerative changes or marked difference in the refraction.

It is only the fifth group of cases that may be legitimately discussed in the present paper, and it seems a pardonable repetition to quote from my previous article[13] the description of two cases illustrative of the disappearance of the opacity in senile cataract, without absorption of the lens substance—both, curiously enough, commencing after a severe attack of conjunctivitis.

The first case was reported by Gardiner[5] in 1891. The patient was 64 years old. The right eye had become so defective that reading was no longer possible. In the left eye there was only light perception. At first glance both lenses presented the same appearance, but on closer examination it was seen that there were superficial clear-striated areas in the right cataract, while the left was entirely opaque. The left lens was extracted, and during the convalescence the patient was attacked with what was called "a severe conjunctivitis" in the unoperated right eye, which lasted one week. At the end of the fourth week vision with + 11 D. = 20/20 in the left eye, and with — 1.50 D. = 20/30 in the unoperated and formerly cataractous right eye. Several months later the refraction of the right eye increased to — S. 4.50 — C. 1.50 axis 180, and vision fell to 20/50. With the exception of a small grayish opacity posteriorly the whole lens was quite transparent.

Norris[12] has observed a somewhat similar case in which the subjective sensations caused by the development, ripening and subsequent absorption of cataracts within their capsules were well recorded by an unusually observant woman of 75, over a period of fourteen years. Following two severe attacks of conjunctivitis considerable visual change was noticed, and on rising one morning of the eighth year of observation, she found that she could see better than usual. Under full mydriasis, with a 1/10 concave lens, vision = 16/100. Three years later the myopia had decreased, and with a 1/30 concave lens, vision = 20/200. With a 1/5 convex lens, Jr. V. could be spelled out at four inches. This visual state remained the same until the patient passed out of observation, still wearing her glasses and keeping the pupils dilated with a weak solution of atro-

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

pin. Norris describes minutely the gradual lenticular changes in both eyes.

EXPERIMENTAL PRODUCTION OF CATARACT.

As early as 1857 Kunde experimentally produced cataract in frogs by introducing into the large intestine and subcutaneously solutions of common salt or sodium nitrate, and he stated that the same effects might be shown in kittens or dogs. Strong solutions of sugar act similarly. Kuehnhorn, Weir Mitchell,[9] Deutschmann and many others have showed that immersion of a fresh transparent lens in a solution of sugar or salt produces superficial opacity, which clears if the lens is put immediately into fresh water. It is of interest to note that a lens dislocated into the vitreous may retain its transparency for many years. DeWecker reports a case in which a dislocated lens remained clear in the vitreous for eight years, and C. Jaeger claims to have seen a lens remain transparent in the vitreous for a period of 30 years. Theobald[21] reports a case in which a lad of 18 had been able for ten years to voluntarily shake a dislocated transparent lens into the anterior chamber, and preferred to do this rather than use cataract glasses. The lens later became opaque and the capsule burst, giving rise to a marked inflammation. Williams mentions a case of spontaneous dislocation of the lens in both eyes without loss of transparency. There was frequent prolapse of the lens into the right anterior chamber.

Again, it has been proved that if the blood vessels of a frog are injected with a solution of sugar or salt of sufficient density, the crystalline lenses will become opaque, and that if the frog is placed immediately in fresh water this opacity will clear. Deutschmann[3] maintains that a lens will become cloudy only when the solution contains at least 5 per cent. of sugar or 2.5 per cent. of salt. Recent analyses of the aqueous in cases of diabetic opacities have shown that the percentage of sugar is below this minimum. Hence, it has been argued that it is likely that we must attribute the lenticular changes in diabetes to more complicated disturbances of nutrition than the simple extraction of water. In addition Weir Mitchell[9] called attention to the fact that an exposed lens when dried does not become opaque. In the early stages of cataracts produced experimentally, there is seen an edema detaching the lens capsule, and separating the lens fibers, with subsequent degenerative changes.

In the ninth volume of the Johns Hopkins Hospital Reports, R. L. Randolph reports some suggestive experiments relative to the regeneration of the lens in rabbits and newts, or water lizards.

DISAPPEARANCE OF OPACITIES OF THE LENS AND CAPSULE AFTER TRAUMATISM.

Deutschmann reports two instances in which after 36 hours rest and the application of a pressure bandage there was complete clearing of a diffuse and sharply defined opacity beneath the lens capsule, following a wound of sclera at the periphery of the anterior chamber. Dr. Frank Fisher of Philadelphia has told me of a similar case, in which he applied several scleral sutures. Although the opacity persisted much longer, the ultimate issue was perfect vision. Becker has observed the eventual clearing of transient opacity of the lens after iridectomy for glaucoma, with no demonstrable injury to the capsule. He attributed the opacity to pressure on the anterior lenticular surface after evacuation of the aqueous.

J. J. Mills[25] reports an interesting case of the clearing of traumatic cataract in a lad of 19, and describes similar cases reported by Knapp, Plaut, Rydel, Desmarres, Jr., and Völckers.

Norris[12] has collected a number of cases in which minute and sharp-cut wounds in the lens capsule may heal with a perceptible scar and the resultant cataract clear or remain only partial. Robert[17] reported a case in which the lens capsule was punctured by a spine of a chestnut burr. The spine was removed through the corneal wound, and although the lens became cloudy, it afterwards cleared entirely. That a scar caused by a capsular wound may afterwards clear is proved by cases of Mackenzie, Liebreich and others.

It may be of interest to recall that foreign bodies may lodge in the lens and not cause permanent opacity. Norris[19] has seen a case in which a foreign body remained in a clear lens for 28 years. Doyne[4] records an instance in which for nearly 30 years a soldier carried a fragment of a gun-cap in the nasal quadrant of the posterior portion of the lens, during which time the lens had remained so transparent that he could use the eye for aiming his gun. Desmarres, Jr., mentions a case in which a foreign body lodged in the lens causing opacity, which subsequently cleared up, leaving only a small black spot surrounded by a very limited cloudy area. Jackson and Schneideman[24] report a case in which, although a foreign body had passed through the lens three months previously and had left an opaque track through the media, vision was only reduced to 5/7. The foreign body could be seen embedded in the retina.

LONG-DELAYED OR NON-PROGRESSIVE CATARACT.

It is well known that the progress of senile cataract beyond the incipient stages may be delayed many years. Opacities in the naso-inferior quadrant sometimes increase so slowly that they may be almost called non-progressive. DeSchweinitz[19] describes a case in a woman of 68, in which there was practically no change for 22 years, although she used her eyes continually and regardlessly at the finest kind of close work. At the last examination vision in the right eye was 6/12, in the left 6/15.

Norris[12] cites instances in which the progress of cataract beyond the initial myopic changes (the so-called "second sight") were delayed as long as 25 years. Nicati has observed in a myope of 78 the disappearance of faint opacities in the anterior cortex, with full acuity of vision two years later with a — S. 9.00 lens.

CATARACT ASSOCIATED WITH CHOROIDAL DISTURBANCE.

It has been contended that, as cataract is often the direct result of hyperplastic and degenerative changes incident to malnutrition, if the nutritional disturbance could be regulated, the lenticular opacities might improve, or at least be held in check; and there is little doubt that the maintenance of general health, the treatment of any constitutional disorder, careful and repeated refraction of the eyes, may delay the maturation of cataract. In cases associated with ocular disease, particularly a generally disturbed and congested choroid, not a true exudative inflammation but what is aptly described by DeSchweinitz as "epithelial choroiditis," the prolonged use of cycloplegics, the administration of alteratives and other appropriate measures are of great value in preserving visual acuity. Risley[16] has been a prominent advocate of such treatment; and DeSchweinitz[19] mentions a case in a woman with choroidal disturbance, who, under strict medical supervision for 11 years, showed practically no increase in well-marked striæ and fine clouding of each lens. However, both of these observers, before this section in 1900, expressed

themselves in no uncertain terms as to the permanency of already existing opacities. DeSchweinitz said that although under appropriate treatment lenticular changes apparently on the increase may be checked, he had never seen "the smallest speck of opacity disappear." Risley confirmed this statement and urged that it should distinctly go on record in the proceedings of this Section, that there is never "the slightest disappearance of an opacity in the lens." He added: "Where an opacity is formed in the lens you can rest assured it will remain there, and I think we should say so in order to prevent imposition on the community by the charlatans who advertise the removal of cataract by absorption." Von Jaeger remarks that he has often seen cataract stationary in cases, the result of traumatism or slight choroiditis, but he had never, under any circumstance, observed the clearing of even the slightest senile opacity. However, he reports the case of a young myope in whom marked equatorial striæ in both anterior and posterior cortex gradually cleared and entirely disappeared in five years. On the other hand, Wood[23] reports the case of a woman past 70, in whom there were evidences of extensive choroidal disease when the lenticular opacities were first noticed. There was a quiescent period of nearly five years, during which the fundus disease remained inactive and the cataract nearly non-progressive. Unremitting close work was continued. After an interval of eighteen months the cataract seemed mature. Six months later it had partially cleared and an area of recent choroiditis was discovered in the fundus. Later there was renewed advance of the lenticular opacity, although no new choroidal disease developed. The cataract was extracted with ultimate corrected vision of 20/30.

I have seen the partial disappearance of a dense nuclear opacity after appropriate treatment for choroidal disturbance and systemic gout, with corrected vision of 6/20 in a man of 50. At the present time, after discontinuance of dietary and hygienic precautions, the opacity has returned, and corrected vision is reduced to 5/200, with complete obscuration of fundus details.

Dr. H. V. Würdemann has given me histories of three cases of complicated choroidal cataract in which the opacity cleared to a marked degree, in one instance entirely disappearing.

Bates[2] has seen two cases of incipient cataract cured and one greatly improved, apparently by such simple measures as drinking at least three quarts of water a day, moderate exercise and proper personal hygiene. According to W. O. Moore[10] the use of potassium iodid in syphilitic patients may cause the disappearance of incipient cataract. G. O. Ring[15] mentions the disappearance of well-marked lens opacities in a case of double optic neuritis, of specific origin, after the administration of potassium iodid. The case was seen by the late W. F. Norris, who observed at once that the patient had incipient cataract.

According to Norris[12] Koenig has seen the clearing of cataractous opacities in a case of uric acid diathesis, and mentions the resumption of lenticular transparency in an arthritic patient with incipient cataract, after a course with Contrexéville waters.

DIABETIC CATARACT.

There is ample testimony as to the improvement of lenticular changes in glycosuric disorders. Koenig[8] observed the clearing of a diabetic cataract, with improvement of vision from counting fingers to 1/3. Seegen has reported the spontaneous absorption of diabetic cataract. Fuchs mentions the partial disappearance of lenticular opacities in diabetes after the prompt and successful administration of the "Carlsbad cure." W. A. Moore[10] speaks of the use of Carlsbad water and general dietetic and hygienic treatment effecting the disappearance of diabetic cataract. He also reports a case in which floating bodies in the vitreous and peripheral opacities in the lens in a diabetic woman of 50 partially cleared with the diminution of glycosuria. The opacities became denser as the glycosuria increased, until the lens was quite cloudy. On the disappearance of the severe diabetic symptoms the lens gradually cleared, although the vitreous opacities remained. The fundus appeared normal. The patient died three years later, without showing further changes in the intra-ocular media. DeSchweinitz[19] relates an instance of a similar nature in a myopic woman of 50, with 10 per cent. of sugar in the urine. Corrected vision at first examination was 6/7.5 and 6/9. By the suitable changing of lenses and rigid dietary precautions the cataractous process was kept stationary for nearly two years. Later, after discontinuance of strict dietary restrictions while undergoing treatment in an institution for the "absorptive treatment" of cataract, there was rapid increase of opacity, and, subsequently, extraction in Europe of two complete cataracts. Nettleship[11] says that diabetic cataract may disappear entirely, and he reports a case in which the lens completely cleared on the subsidence of severe diabetic symptoms. Appenzeller reports a somewhat similar case.

THE "NON-OPERATIVE" TREATMENT OF CATARACT.

An inquiry into this subject is a natural sequence to the foregoing observations. From time to time alleged cures of cataract without operation have been described by numerous charlatans, religious fanatics and many kinds and conditions of irregular "paths." Occasionally the "cures" are the result of the application of "absorbing drops" containing mydriatics or miotics, which may increase vision in limited or discrete peripheral or central opacities. It might be here noted, however, that occasionally prolonged mydriasis may cause rapid increase of cataract, as is sometimes seen after preliminary iridectomy, leaving the patient worse than before the treatment.

Often the explanation of the "cures" may be found in an incorrect diagnosis, either through ignorance or with nefarious intention. A curious explanation of some of the miraculous cures in religious devotees is dislocation of the opaque lens by violent prostrations before a shrine or altar. Curious cases of this kind have been reported by Ramos[14] and Santos Fernandez.[18]

Many varieties of instruments for applying massage and electricity to the eye to dissipate lenticular opacities have been offered. In one popular apparatus the "electricity" is clearly due to the vapor of oil of mustard. Sad to say, there are villainous impostors who are attempting to treat by mail cataract and even such a fatal disease as glaucoma. Powerful drugs and dangerous apparatus are sent to innocent and ignorant patients, who risk, not only the dangers of delay, but also improper and sometimes distinctly fatal treatment. I know of one case of hemorrhagic retinitis that speedily ended in fatal cerebral hemorrhage while under the care of a refracting optician; and I have also been told of an instance of detachment of retina in a highly myopic eye, which followed the use of a widely advertised apparatus for ocular massage. It seems likely that vigorous massage in incipient cataract will hasten rather than dissipate opacity of the lens.

A surprisingly great number of persons throughout this country are taking the so-called absorptive or resolvent treatment for all forms of eye affections. There is no doubt that this is often distinctly injurious and it is claimed that the normal consistency of the cornea is greatly weakened, and liquefaction of the vitreous is not unusual in these cases.

From more purely medical sources there have been many efforts to produce absorption of lenticular opacities by local applications. The aims in this direction have been to furnish nutriment to the impoverished or vitiated intra-ocular structures or to apply locally or administer constitutionally some solvent or discutient substance. Arsenic, strychnin, phosphorus, cannabis indica, thyroid extract, hydrocyanic acid, potassium cyanid, castor oil and its derivatives, cineraria maritima, pulsatilla, aromatic oils, thiosinamin, and many other drugs have been proposed and tried without avail. Electricity was in vogue some years ago, but is now generally discarded, except by advertising charlatans.

In 1891 Kalish,[7] after discarding all drugs, evolved a form of treatment of uncomplicated immature cataract, including strict bodily and ocular hygiene, careful and repeated refraction, a special form of manipulation and the instillation of a mixture of equal parts of glycerin and 1 per cent. solution of boric acid in rose water, for which he claimed good results in several cases. In a recent paper, despite the lack of support and unfavorable criticism for nine years, he still maintained the beneficient results of his method, and claimed 69 successful results in 118 eyes, with even higher percentage in his very recent cases. It has been suggested that the local manipulations and instillations are a minor element in his success. Recently Badal[1] remarks that he has apparently checked incipient cataract for eighteen months and for two years by instilling twice daily a few drops or applying with an eye cup from one to two minutes to the open eyes a 2.5 per cent. solution of either sodium or potassium iodid. He claims that the salt is readily absorbed. Ocular baths of solutions of sodium salicylate have also been recommended in France for arresting the progress of incipient cataract.

PARACENTESIS OF THE ANTERIOR CHAMBER.

In the treatment of incipient cataract, paracentesis of the anterior chamber was advocated by Sperino of Turin in 1862, who published an account of 45 cases with promising results; in some, perfect restoration of vision. In 1865, Sir David Brewster, in a paper before the Royal Society of Edinburgh, claimed that he had cured himself of incipient cataract by repeated paracentesis of the anterior chamber. His thought was that a fresh secretion of aqueous might contain a less proportion of albumin and so counteract the desiccation of the lens fibers. He also suggested the injection of distilled water or a fluid equivalent to healthy aqueous in the anterior chamber after paracentesis. Hogg[6] carefully followed Brewster's experiments with negative results.

SUMMARY.

1. There is no question as to the authenticity of many reports of the spontaneous disappearance of senile cataract, and these cases may be explained and classified in five groups as follows:

a. Cases in which there was absorption after spontaneous rupture of the anterior or posterior capsule.

b. Cases in which there was spontaneous dislocation of the cataractous lens.

c. Cases in which there was intra-capsular resorption of the opaque cortex and sinking of the nucleus below the axis of vision after degenerative changes in Morganian cataract, without rupture of the capsule or dislocation of the lens.

d. Cases in which there was complete spontaneous resorption of both nucleus and cortex without reported history of ruptured capsule, dislocation or degenerative changes of the Morganian type.

e. Cases of spontaneous disappearance of incipient cataract without degenerative changes or marked difference in the refraction.

2. It is not uncommon for opacities of the crystalline lens or its capsule, the result of traumatism, to disappear, even when the capsule has been penetrated.

3. Too much stress can not be laid on the value of personal hygiene, treatment of associate local and general disorders, careful and repeated refraction, and the proper use of the eyes in arresting the progress of incipient cataract.

4. In certain complicated cases, secondary to grave nutritional disturbances, lenticular opacities may entirely disappear under appropriate treatment.

5. Generally speaking, the so-called "non-operative" treatment of cataract as practised by advertising charlatans and irregular physicians is worthless, often distinctly dangerous, and consists in no beneficient measures not known and appropriately used by all reputable oculists.

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DISCUSSION.

DR. H. V. WÜRDEMANN, Milwaukee, sent a communication (which was read by Dr. N. M. Black) concerning cases of lenticular opacity (cataract) cured or relieved by treatment, as follows:

CASE 1.—Miss A. P. of Manitowoc, age 28; school teacher, cashier and librarian; first seen Feb. 2, 1895; came on account of diminished vision which was not sufficiently relieved by glasses which she was wearing, which were —5.00 spheres; general health said to be good, but eyes had been getting more short-sighted for years. Without glasses R. and L. = fingers at 2m. With correction R. —6.00 ⌒ —.50 — 180°; L. —6.00 ⌒ —.50 180° = 6/12. Examination under mydriatic showed marked radiating lenticular opacities, the lens segments being well marked, the opacities extending from the periphery nearly to the center of the lens; ophthalmoscopic examination showed marked congestion of the optic discs and choroiditis. Treatment by atropin, rest and correction of the refraction, syrup of the hypophosphites compound, later pil. Blaud, which

was not well borne and for which the hypophosphites and the bromid of gold, arsenic and mercury were substituted.

Sept. 9, 1895, the lens opacities had almost disappeared, only a few striæ being observable; under mydriasis the vision then R. and L. = 6/6. The case was seen steadily several times a year until May 28, 1900, when V. in R. was 6/8 and L. 6/12; opacity of the lenses again plainly observed and greater in right than in left. The vision remained stationary for a year, when, in September, 1901, she went to work as cashier in a dry-goods store in a small town; in December the vision had decreased to R. 6/8; L. 6/18, the opacities in lenses increasing; work was then discontinued and treatment with the gold, arsenic and mercury internally given; May 14, 1902, the opacities were found to have greatly decreased, the vision being 6/8 and 6/12; choroiditis was not observable; patient had greatly improved in general health and made up her mind that use of her eyes for near work was not consistent with preservation of sight. At this date, June 26, she is in good general health. This patient is yet under general observation.

Case 2.—Sept. 23, 1897, F. P. of Oshkosh, age 17, schoolboy, came complaining of greatly diminished vision in the right eye and jerking of the left. V. R. 5/25 eccentrically; L. 5/4 with vertical nystagmus on monocular fixation, right sclerotic congested; tension —1.00, semilunar ring of lenticular opacity, turbid vitreous, nasal portion of fundus could not be plainly made out and at first retina was supposed to be detached. Later this cleared up so that extensive vitreous opacities were made out. Spots on the posterior surface of the cornea were plainly seen and the condition was diagnosed as uveitis. In the left eye one discrete spot of choroiditis was apparent. The young man was greatly troubled with stomach and intestinal indigestion; was eating everything, and particularly sweets and starchy foods. Blood examination was normal, excess of uric acid and urates in urine; the patient was greatly troubled by flashes of light and photophobia. Treatment was instituted by rigid diet and regimen, administration of mercury by inunction, several pilocarpin sweats and later iodid of mercury and medication of the bromid of gold, arsenic and mercury. Under this form of treatment the uveitis gradually subsided, the lenticular and vitreous opacities becoming absorbed, the latter entirely so; Feb. 3, 1897, having almost entirely disappeared. In the left eye at this date the choroiditis was more marked, being of the disseminated variety. Aug. 13, 1898, V. R. =fingers ½m.; L. 6/8; mixed treatment was instituted. The right eye at one time became divergent, but as the iris regained its normal color and mobility it became parallel with the other. Patient was lost sight of for about a year. When he returned Feb. 15, 1902, he was found to have become a heavy, hardy man; the left eye being normal, while in the right the nerve and retina were atrophic, the eye having become useless, the vision being reduced to light perception and the lens was found to be slightly opaque. No further indications for treatment at this date.

Case 3.—Mrs. A. B., age 41, first seen June 27, 1898, with small error of refraction: R. +.50 ⌒ +.37, 180°; L. +.75; returned June 30, 1899, when the refraction was to have changed to R. +.25 ⌒ +.25, 180°; L. +.62 ⌒ +.25, 180°. On both these occasions a cycloplegic was used. Aug. 29, 1901, the refraction had not changed, but the vision with the above glasses was 6/18; examination with mydriatic showed cortical, peripheral and nuclear cataract. Advice to stop all near work was given and treatment by the bromid of gold, arsenic and mercury administered. November 27 the vision R. = 6/12; L. 6/8; the opacities in lenses increasing, some stellate in the right and the sectors of the lenses showing distinctly. Dec. 12, 1901, vision R. 6/12; L. —6/24; treatment continued. March 21, 1902, vision R. 6/12; L. —6/12; sent to Dr. Casey A. Wood of Chicago in consultation. The lens opacities were much less than at previous visit. June 1, 1902, lens opacities lessened in amount and vision both eyes 6/12. I could at no time satisfy myself that choroiditis was present. In spring of 1899 the patient married a physician, an old gentleman whose sight was failing on account of central atrophy of the choroid and retina, and she read a great deal to him. At this time the optic nerve head and the choroid were found to be much congested; advice to stop all work was given. In July, 1902, she went east and was seen by Dr. Pyle in Philadelphia. This patient is yet under general observation.

The above three cases are the only ones that I have seen in special practice of fourteen years which have been observed sufficiently long to determine the disappearance or modification of opacities of the lens in comparatively young persons. In all three cases there was choroiditis. In two of these marked overuse of the eyes was manifest. In two of them there were disorders of nutrition. In all three the choroiditis was relieved by treatment, and with it the nutrition of the lens was sufficiently improved so that the lenticular opacities have been made to disappear. The vision in two of the cases has been kept nearly normal; in the other the result has been atrophy of the optic nerve and retina. I have seen a comparatively large number of cases of stationary lenticular opacities of the cortex; the most of them having the radiating or wheel form, and in most cases the opacities being most prominent in the lower nasal quadrants, occurring in persons over 60 years of age. While these may be termed "cataract," yet in such cases to the patients or even to physicians I prefer to call them "opacities of the lens of stationary type."

Dr. L. H. Taylor, Wilkesbarre, Pa.—That many cases may remain stationary or vision slightly improve is well known to all of us, and I believe, moreover, that in some cases the opacities will entirely disappear. I have in mind the case of a man who visited an excellent oculist in New York some years ago, and his case was pronounced one of cataract, and he was told that it would be ready for operation within a year. I saw him some years afterwards and the opacity had entirely disappeared and there was no sign of cataract. He had slight myopia in one eye and hypermetropia in the other. He died at the age of 68 without having had any return of the trouble. I have seen one case of diabetic cataract in which the opacity disappeared. It was thought that where a foreign body had injured the lens it would be followed in any case by traumatic cataract, but a number of cases have been reported now—Dr. Baker has reported some, and Dr. Pyle has spoken of many, and I have seen one marked case—where such opacity has cleared up; where the patient received an injury to the lens and I thought it would be undoubtedly followed by traumatic cataract, but under rest and the use of the pressure bandage it entirely cleared up.

Dr. E. V. Appleby, St. Paul—Sixteen months ago I removed a small piece of iron from an eye with the Haab magnet. There was a small penetrating wound of the cornea as well as of the iris. One could, by placing plus lenses in front of the ophthalmoscope and diminishing their strength one by one, trace the path of the foreign body through the lens. The small foreign body could be seen in the lower portion of the vitreous about as far back as the equator. Owing to its smallness I applied the magnet so that its power lines would attract the iron in the direction of the zonula. After a few moments there was a bulging forward of the iris at about 30 degrees from the vertical toward the nasal side. The current was then broken and the power lines of the magnet were then directed so as to attract the particle downward and forward. After endeavoring several times in this way to draw the foreign body into the anterior chamber I made an iridectomy, hoping to get the iron as well as the iris. Although the iridectomy was made over the side of the bulging in the iris, still the iron remained. On reapplying the current a sharp click was heard and on the magnet tip was seen a small particle of iron. On one side of this fragment of iron was a small, fine, hook-like process which evidently had been the cause of the great difficulty of extraction. Three weeks ago the vision of this patient was 20/30 and better. I regret to say that I did not dilate the pupil in order to determine whether or not the track in the lens was still visible.

Dr. E. C. Ellett, Memphis, Tenn.—We know that sclerosis of the lens and consequent shrinking begins very early in adult life, and this shrinking and reduction in size is compensated for by the formation of new lens fibers from the cells underneath the anterior capsule of the lens. Now, anything that interferes with the growth of these fibers permits the

contraction of the center of the lens to go on without the reduction in size being compensated for by the formation of new fibers at the periphery, and the result is that the shrinking of the nucleus forms spaces between the lens fibers due to their separation, which are the early opacities we see in incipient cataract. Anything that interferes with the growth of these fibers, whether constitutional disorder, or senility, or anything that prevents the formation of new fibers, to make up this loss, will allow the formation of opacities in the lens. Anything that will restore the activity of the formation of new lens fibers, which, of course, is more apt to be brought about where the trouble is a constitutional disorder, will permit the fibers to form again and the spots or spaces will be wholly or partially obliterated. It seems to me that is the explanation for the partial or complete disappearance of lens opacities.

DR. MYLES STANDISH, Boston—I am brought to my feet by the remark of one of the gentlemen that sometimes a lens injured by a foreign body does not become opaque. We can select with considerable accuracy the injuries that will not cause opacity. It is always where the foreign body is extremely small and when it goes through the lens in such a manner as to produce a minute wound in the capsule that will promptly heal and so prevent the aqueous soaking into the lens and the resulting increase of opacity. I have seen such tracts persist for many years without any increase in the opacity. But when a large, lacerated wound in the capsule is made the lens is doomed.

DR. HARRY FRIEDENWALD, Baltimore—Dr. Pyle has mentioned the very ill effect of a certain form of treatment recently much in vogue in our part of the country for cataract and all other ocular affections, and has known detachment of the retina to follow. I have seen a case of this kind; the treatment was followed by severe pain lasting several days, and when the patient entered our hospital he had acute glaucoma; iridectomy and extraction of the swollen lens had to be performed to save the eye.

DR. LUCIEN HOWE, Buffalo, N. Y.—As to the question of the clearing up of these opacities, it strikes me there is an opportunity for some investigation. A few years ago I had occasion to puncture the lens in a young rabbit, and noticed that a number of opacities of considerable size did clear up. It is a field for some of the young men to study, and that is a way to settle some phases of this question.

THE ANATOMY OF THE OCULAR MUSCLES

AND THEIR ACCESSORY STRUCTURES AND THE PHORIAS AND TROPIAS.*

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The following observations are based on the study of 200 cases examined for errors of refraction and lines of regard. Measurements were taken with the following objects in view: To determine the relation of the orbits to the plane of the face in the anomalies of refraction and the relation of the visual lines to the varying positions of the axes of the orbit, also to obtain suggestions for a possible anatomic cause or the varying so-called anomalies of the extra-ocular muscles and to explain the anomalies of the line of regard.

Taking the horizontal plane as measured through the attachment of the orbicularis-palpebrarum for the transverse direction (Fig. 1), and from the same points to the fossa on the superior maxilla toward the median line and over the root of the canine tooth for the vertical direction (d, d), we have for our purpose the base lines of the plane of the face. From these lines the following measurements were made to determine the angles of the plane of the orbit to the plane of the face: Plane A, the relation of the base orbit to the horizontal plane of the face (Fig. 2); plane B, the relation of the plane of the orbit to the vertical plane with the brow elevated to expose the rim more perfectly (Fig. 3); plane C, the declination of the longest diameter of the orbit from the horizontal plane (Fig. 1, c, c).

The next step in measurement was to determine the relative position of the two eyes to the plane of the face (Fig. 1). This was done by adjusting a wire screen in front of the face, using the fixed points previously indicated, then observing the relation of the pupil to the vertical and horizontal planes and observing the deviations from the symmetrical form. After analysis of the cases I have classified them in the following manner:

Class 1.—Hypermetropic type with plane A at an angle ranging from —15 to +15; plane B, inclination from —10 to +20, and plane C, declination ranging from +25 to +40 (Fig. 5).

Class 2.—Myopic type, plane A, at an angle ranging from +10 to +35; B, from —5 to +30 and C, from +15 to +50 (Fig. 4).

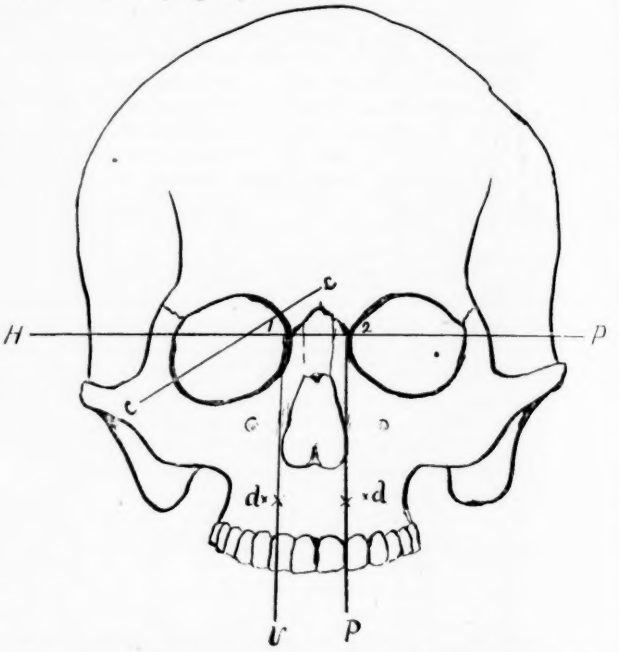


Fig. 1.—H P, Horizontal plane; 1, 2, attachments of the orbicularis palpebrum; V P, vertical plane; d, d, canine fossa; c, c, direction of largest diameter of the orbit.

Class 3.—Emmetropic type, Plane A, at an angle of +10 to +15; B, from +10 to +15, and C, from +15 to +40 (Fig 3).

The width of the anterior portion of the ethmoid cells at the nasion, from the internal nasal process of the frontal bone of one orbit to the corresponding point of the fellow orbit, varies indirectly with the distance intervening between the apices. The right eye is usually higher than the left, and the plane of the base of the right orbit is less inclined toward the plane of the face than the left. Where the reverse condition obtains, even when it is slight in degree, it becomes noticeable, so habituated are we to the left being the lower eye. Right hyperphoria occurred to some degree in 75 per cent. of all cases examined.

While the rim of the orbit is irregularly oval, the cavity is that of an irregularly quadrangular pyramid, and its axis is both depressed 10 degrees and divergent 20 degrees from the planes of the face. The apex half of the floor of the orbit is usually on a higher plane

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

than the base half. The eye is suspended in the superior 5/6 of the orbit.

The visual lines are directed higher when planes B most nearly approach the plane of the face and lower

Fig. 2.—H P, Horizontal plane of face; A A, orbital base plane A, + or —; N, nasion; H, hyperopic; M, myopic.

where the angle is greater. The visual lines tend toward the median line of the face when the plane A is less than +15, and further away from it when it is greater. The more nearly the longest diameter of the orbit approaches

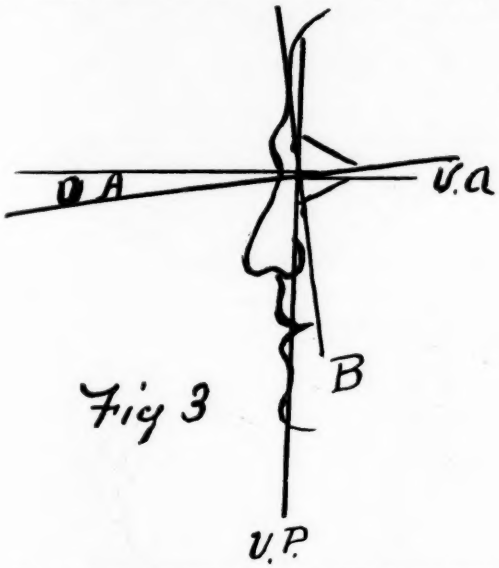


Fig. 3.—B, Vertical direction of orbital base; plane B.

the direction of the horizontal plane of the face the less the declination of the retinal meridians. A line drawn at right angles to the plane of the base will give, as a rule, the direction of the axis of the orbit. In measur-

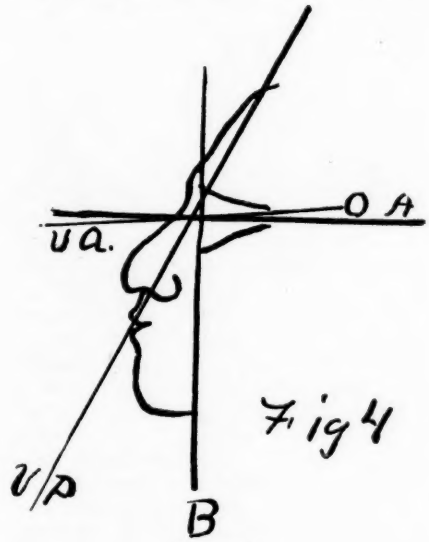
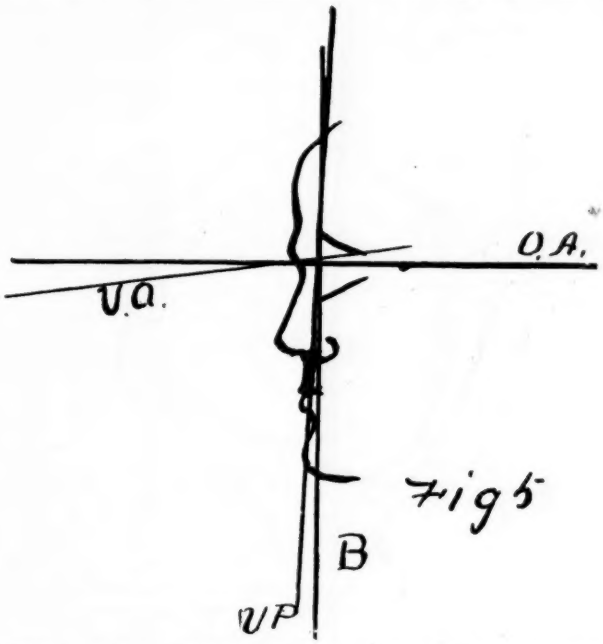


Figure 4.

ing the orbital planes and angles on the living subject the operator must see that the brows are elevated so as to allow the instruments to rest firmly against the bony structure with a minimum amount of soft tissue intervening. In the hyperopic type it was found that the distance at the nasion averaged 30 mm., in the myopic 38 mm., in the emmetropic 35 mm. In the hyperopic type the lines of regard are usually directed higher and in the myopic lower than normal.

In the symmetrical male adult skull the depth of the orbital cavity is about 45 mm., the nasal wall 55 mm., the temporal wall 60 mm. In the hyperopic type: nasal wall 53 mm., temporal wall 52 mm. The nasal wall corresponding more nearly to the symmetrical skull. In the myopic type: nasal wall 56 mm., temporal wall 55 mm. The deviation or tendency of the lines of regard is toward the relatively short walls of the orbital cavity. The prepared skulls from which measurements were taken to determine the relations of the orbital cavities to the plane of the face were selected by taking the measurements, as hereinbefore indicated, and comparing them with those corresponding to the living subject. The two orbital cavities of the same skull may differ in declination and deviation of their axes. In a patient with a high point of regard and a great deviation on one side with a normal condition on the other, a phoria or



Figs. 3, 4, 5.—Position of head in various angles of plane B; O A, V A, orbital and visual axes.

tropia may result. In this class of cases the operation should be to secure the full result by correcting the eye of the deviating orbit.

In addition to the bony structure we must take into consideration the muscles and their accessories: the suspensory structures, the check ligaments, capsule of Tenon and the anterior orbital fascia. In the emmetropic type the internal rectus is shorter than the external rectus, the sheath of the muscle and its check ligaments are heavier and less perfectly differentiated. The inferior rectus is shorter than the superior rectus and the connective tissue structures are more plainly made out. The orbito-muscular check has been well described by Motais and others. I have found another, and, so far as I can make out, constant set of fibers and bands which spring from the periosteum of the orbital wall about 15 mm. from its rim and extend forward, enclosing and blending with the sheath of the muscle, interlacing with the anterior orbital facia and blending with the anterior fibers of the capsule of Tenon and attaching with it to the anterior portion of the globe one or

two mm. back from the sclero-corneal junction. These bands form an almost continuous membrane, being clearly made out on the nasal side and least clearly marked on the roof side of the orbit. These structures may be denominated the orbito-ocular check, and be schematically illustrated as in Fig. 6. They seem to retain the eye in its position when the recti muscles are severed or paralyzed, and steady the movement of the eye when the opposing muscle is called into action.

In the hyperopic type the internal rectus muscle is relatively short, the check ligaments are heavy, clearly made out and have numerous bands of adventitious attachment, preventing the free rotation of the globe and embarrassing the action of the abducting muscles. The checks to the inferior and superior recti are well marked, but those of the external recti are very rudimentary. The external rectus muscle is thin, the aponeurotic expansion difficult to make out. The muscle in cases of squint is usually relatively too long, and the squinting eye low in power and slow in action. In physiologic or hereditary myopia the external rectus is relatively the stronger muscle and its adventitious tissues much better developed, and in exotropia the internal rectus is relatively too long, its checks thin and difficult to demonstrate. The conclusion would be that the atypic development extends to the static and dynamic soft structures, and that the relatively short side is imperfectly developed, and in this lies the primary cause of the errors in the direction of the lines of regard.

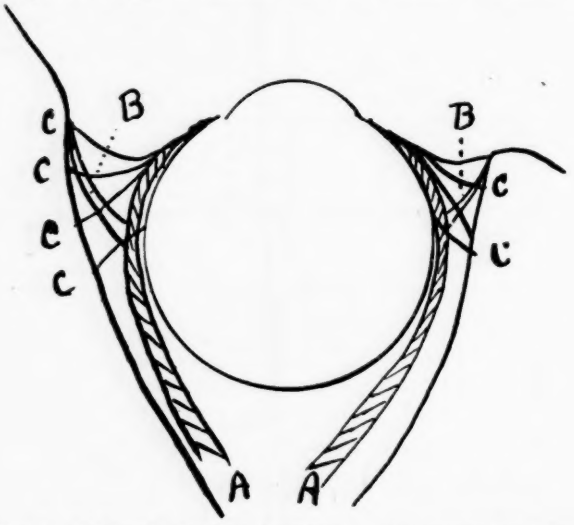


Fig. 6.—Schematic drawing showing: A, the external and internal recti muscles; B, orbito-muscular check ligaments; C, orbito-ocular check ligaments.

It will be found in the hyperopic type that the axes of the orbital cavities cross much further back than in the other types, and that the bases are nearer together at the nasion. The nasal side of the orbit is relatively shorter than the temporal, and the internal rectus muscle and its connective tissue accessories are less perfectly developed. The external rectus is narrower than the internal, the inferior rectus attached to the globe by a narrow tendon and a thin annular ligament. The external orbital and ocular checks are thin, delicate and often only partially developed.

CASE 1.—The following are the measurements of a hypermetropic patient (Mrs. H., aged 26). R. and L. V. = 20/200 + 4.50 V = 20/20, head medium or high, face very broad through the horizontal plane, facial angle = + 10. R. plane A — 5, B = + 5, C, = + 10. Left plane A = + 10, B = 20, C= 15. Right orbital crest 15 mm. higher than the left. Right hyperesophoria = 6 to 18, head posed forward and to the right. There were no symptoms that would in any way suggest that the eyes were a source of irritation as long as the full correction is worn, or as the patient is allowed to pose the head to correct the phoria. As soon, however, as the head is forcibly held in the primary position, asthenopia and vertigo result and an attack resembling migraine soon follows. In this case there is a history of periodic squint lasting about three months following some infantile disease.

The error of refraction was not corrected until her 18th year. Then the conjunctiva was opened and the tendon exposed; there was found to be an uninterrupted band of connective tissue extending from the internal rectus to the superior rectus blending with the orbito-ocular check. With the severing of this band the hypertropia disappeared and the pose of the head was corrected though the heterophoria could still be made out.

The following case is cited to illustrate the result of a complete tenotomy of the internal rectus muscle in a hyperopic patient with orbits of low divergent angles and a short orbito-muscular check ligament.

CASE 2.—Mr. L., aged 34, when 14 years old was operated upon by an eminent English physician for the correction of squint. He was not refracted until he visited me twenty years later. About one year after the operation, the eye, which had become slightly divergent immediately following the procedure, became markedly exotropic and fixed in its position. The

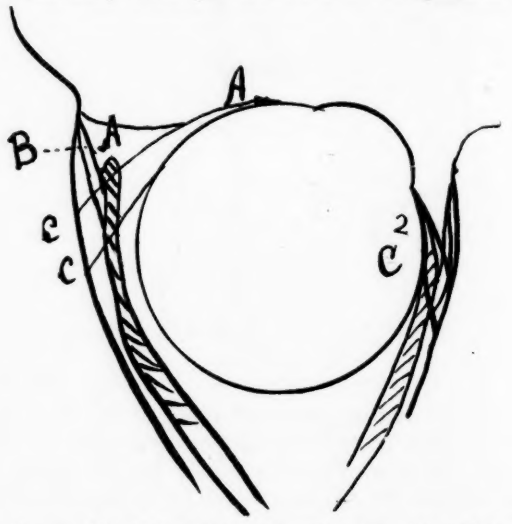


Fig. 7.—A, Cut end of internal rectus; B, its orbito-muscular check; C², the contracted orbito-muscular check of the externus.

conjunctival cicatrix showed that the operation had been made with a broad incision, rather far back from the muscle attachment. In preparing for reattachment the conjunctiva was opened and freed from its cicatricial adhesions, but no trace of the internal rectus could be found. I was able to make it out, however, as being held away from the globe and resting against the wall of the orbit (Fig. 7). After some difficulty in separating it from its surroundings, I attached it to its original insertion; not, however, until I had freed it from its check ligament (b), which was much contracted. After fixing the muscle in position, I found that, though I had forcibly stretched the internus, the eye could only be moved by the patient to the median line. I then opened the conjunctiva over the external rectus and found that there were bands (c) of connective tissue which passed from the orbital wall to the ocular wall, which would not allow free movement of the eye inward. I carefully dissected away these bands and was able to rotate the eye to its full extent inward. The patient could not, however, rotate the eye beyond the median line. The musculo-orbital of the internal check was severed (d), and the movement of the eye was free to the extreme limit of adduction. Plane A was on a line with the horizontal plane of the face, plan B inclined + 5, plane C + 10, base of the orbital cavity very small and relatively long. I present you a drawing made

at the time, illustrating, somewhat schematically, the condition found.

In January, 1890, I had the opportunity to make a dissection in a case of double convergent squint.

CASE 3.—The patient, 24 years of age, had consulted me four months prior to her death. She had at the time fair vision: 20/60, head posed to the left, left eye fixing; vision 20/80, head posed to the right, right eye fixing. The range of rotation was exceedingly small, with a slight torsion nystag-

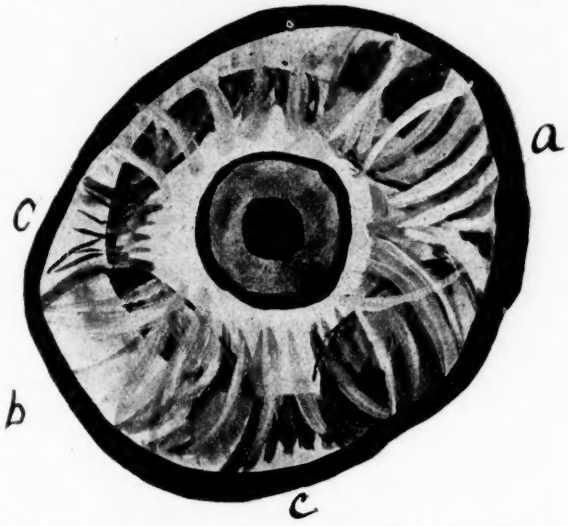


Fig. 8.—a, Superficial connective tissue band (schematic); b, deeper connective tissue band; c, check ligament of the external rectus muscle.

mus.: Refraction: +4.00 sph. for each eye. Vision for right eye equaled 20/30, for left 20/20 minus. In death the eyes were almost as markedly convergent as in life. The lids were retracted and the conjunctiva dissected from the corneo-conjunctival junction. The globe was filled with hot paraffin (melting point 100 F.). After staining with methyl blue, the orbit was also filled with hot paraffin. A section was then made, with a saw, through

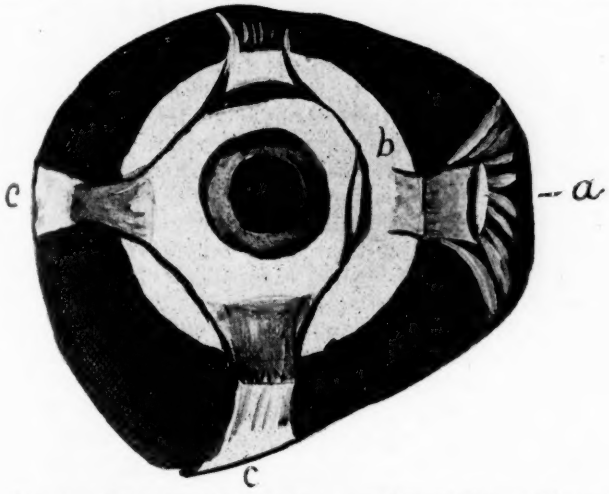


Fig. 9.—Semi-schematic drawing; a, orbito-muscular check (cut end of internal rectus); b, orbito-ocular check, forming adventitious attachment between the muscle and the globe; c, c, c, orbito-muscular check of the superior, inferior and external recti muscles.

the orbit. The drawing which I present to you shows the condition found. The orbital fascia of the fellow eye was carefully dissected, great care being taken to expose the structures in layers. I can only imperfectly illustrate the condition. (Figs. 8 and 9.)

In the case which we have under consideration the head would be classified as medium or high, tending to be broad. The measurement at the nasion is 23 mm., the apices are estimated to be 28 mm. apart and the planes A = —5, B = +20, C = +5. The facial angle = — 10. Orbital axes = 15 with a depression of 10.

The following history is used to illustrate a case of heterophoria occurring in a mixed type:

CASE 4.—Mr. B., aged 34, robust general health, sturdy physique, has from early childhood suffered from headache, periodic asthenopia usually during school terms and has attacks of petit mal, but during the past three years these have been infrequent as he has been engaged in active out-of-door life. His military training has forced him to hold the head in nearly the primary position. He is always conscious of an effort to secure and maintain binocular single vision. With the slightest effort diplopia results and the disengaged eye either turns upward and outward or downward and outward as the case may be to a sufficient degree to rid the patient of the confusion of double vision. I have never been able to satisfactorily estimate the total error. Refraction R, V = 20/20, L, V = 20/20. Atropia R, + 1. = 20/20, L, + .75 = 20/20. Head in primary position, field of fixation normal, adduction =26, abduction=16. R sd.=? L sd.=? Orbital planes: Right eye plane A 25, plane B 20, declination = 25. Left eye plane A 12, plane B 10, C 15. You will observe that the plane A in the right eye has a greater angle by 13 than the left, and the plane B is greater by 10 (Fig. 10). We would class his head as broad and flat if viewed from the right side; if viewed from the left side, long and thin. When attention is relaxed the habitual pose of his head is to the left with the chin depressed.

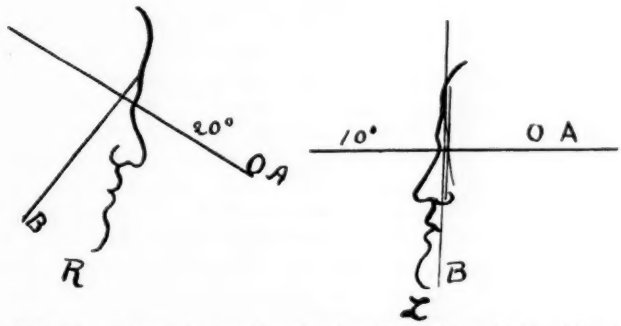


Fig. 10.—Schematic drawing showing the right and left side of face in case. B, direction of vertical planes of orbital bases; O A, direction of orbital axes.

An effort was made about six years ago to correct the hyperphoria by a graduated tenotomy and advancement, but shortly after the tenotomies were made the patient was called into active service and the error has not been taken under consideration until quite recently.

The following observations are the result of my study of cases and the literature on the subject. As a rule, the visual lines are modified in their directions by the relations of the orbital cavities to the plane of the face, and that their bases are, as a rule, guides to their direction. The exceptional cases prove the rule. Stevens, Risley and others have pointed out the relations between certain types of cranial development to certain anomalies of refraction or direction. I have, however, been unable to find any measurements which bear upon this subject from the point of view from which it has been my endeavor to present it, and it may be summed up in the following: The atypic development of the bony structures, connective tissue band and the muscles of direction are the predisposing anomalies of the lines of regard; modifications of nervation are the exciting causes.

In phorias or tropias due to structural conditions we can in many cases by improving the general health and local conditions train the muscles and centers of control to overcome the manifest error though the cause is not removed. The nervous strain remains the same, how-

ever, and must be considered in estimating the wear and tear of the body.

In functional heterophoria or heterotropia, operative procedure is not to be considered; it is here that the physician, skilled in physical culture of the ocular as well as the general muscular system, accomplishes so much good. Heterophoria causing eye strain or eccentric pose of the head occurs in asymmetrical orbital placement. A partial or guarded tenotomy, with a section of the orbito-ocular band, and if need be, a shortening or advancement of the opposing muscle and advancement of the orbito-ocular check meets all the requirements and secures the best results in correcting non-paralytic strabismus, which has not responded to a correction of the errors of refraction and ocular training.

The futility of operating for the correction of tropias or phorias in certain extreme types can be readily understood when viewed from the standpoint of the bony structure as entering into the cause of the anomaly, and I believe that many of our relapsing cases, which have been classified, for want of a better term, as neuro-muscular, will find their place in this group. All who have atypic bony structures do not manifest, either in pose or by asthenopia, the symptoms of their type. The soft tissues and muscles are trained to overcome the imbalance to which the static structures would predispose them. It seems from my observations to be also true that the dynamic or static soft tissues may also be alone at fault and be the cause of any of the anomalies of the lines of regard. The check ligament, by being developed, may hamper the opposing abducting or adducting muscle. In complete tenotomy the check ligament may draw the muscle away from and prevent its attachment to the globe. The opposing muscle may be hampered by shortening of its orbito-muscular check ligament, due to habitual malposition of the eye from overaction of one of the recti muscles, from squint, or from malposition of some of the static structures. The orbito-ocular check ligament may become so elongated and attenuated by continual malposition as to destroy its function as a check. Adventitious bands may exist as the result of imperfect development of the orbital fascias, either through excessive stimulation, as the result of trauma or inflammation of the orbital fascias, which may modify the actions of the muscles, and limit the rotation of the globe. A complete unguarded tenotomy may allow so much retraction of the muscle that the range of action of the musculo-orbital check may be such as to limit the power of the muscle which is directed against it, instead of the globe, thereby limiting the field of rotation and fixation.

THE PHYSIOLOGY OF THE OCULAR MUSCLES.*

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In response to the suggestion of our Chairman, this paper has been so written as to review in the simplest possible manner our knowledge of the physiology of the ocular muscles, and many things more or less connected with the subject have been advisedly omitted as non-essential. Two facts should be borne in mind in connection with the reading of this paper: first, that the action of the muscles on normal eyes alone is considered, the disturbing and modifying influences of errors of refraction and abnormalities of the muscles themselves and their attachments, properly belonging to a study of their pathology and not of their physiology; secondly, all muscles are to be considered as moving the normal eye from the primary position.

THE MOTIONS OF THE EYEBALL.

The eyeball is endowed with unusual freedom of motion, for the accomplishment of which it is supplied with six muscles arising from the bony walls of the orbit, and attached by ribbon-like tendons to the sclerotic. Each muscle is directly associated, physiologically, with one or more muscles of the other eye, so that we can not voluntarily call into play the muscles necessary to move a single eye alone, but must at the same time impart some motion to its fellow. For the purpose of study, it is best to consider the movements of each eye separately and then of the two together, and also to inquire first, what motion the eyeball is capable of having imparted to it and then what muscle or muscles are concerned in the production of these several motions. By motion of the eyeball, we mean motion of its visual axis. The only motions of which the eye is capable are those by which the direction of its visual axis is changed. In studying the motions of the eyeball it is customary to call attention first to certain fixed planes, either planes to which visual sensation may be referred for interpretation, planes of reference, or planes along which movements of the visual axis occur, planes of motion or rotation. The latter constitute the planes of activity of the muscles.

THE PLANES OF THE EYEBALL.

The principal planes of reference are two in number: 1, the fixed median vertical plane of the head passing equally distant from the center of the two eyeballs, and 2, a fixed horizontal plane, passing theoretically through the center of rotation of each eye. These planes are, of course, perpendicular to each other and are planes of reference. By comparing the image of any object with these two planes we are enabled to appreciate whether its position is vertical or horizontal or oblique. The planes of motion are two in number: 1, the anterior-posterior vertical plane of the eyeball; 2, the anterior-posterior horizontal plane of the eyeball, coinciding, theoretically, with the fixed horizontal plane of reference. For the sake of completeness we add a third plane, in which lateral motion of the vertical axis would occur if it occurred at all, but we will see presently that it does not occur, hence: 3, the equatorial, or transverse vertical plane of the eyeball. All of these planes of rotation pass through the center of rotation, and at this point a line passing through the plane and perpendicular to it represents the axis of the rotation of which the plane to which it is perpendicular is the plane of rotation. Thus the axis of rotation for movements of the visual axis in the horizontal plane is a line perpendicular to the horizontal plane at the center of rotation. Besides this axis around which lateral rotation occurs, we have the transverse axis around which vertical rotation occurs and the antero-posterior axis around which there is supposed to occur in certain abnormal conditions a rolling or wheel-like motion of the eyeball, called torsion. Of these movements, two are under the control of the will, namely, lateral rotation and vertical rotation. Torsion is not produced under normal conditions, either voluntarily or involuntarily.

The primary position of the eye, or the position which is by common consent taken as the starting-point for the study of all ocular movements, is that position in which

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, H. V. Würdemann and J. A. Lippincott.

the visual axis and the vertical axis of the ball are parallel with the median vertical plane of the head, and the visual axis lies in or is parallel to the horizontal plane of reference. Theoretically, we speak of both eyes being in the primary position, but it is not practically possible for both to be so at the same time, since some convergence of the visual axes always exists.

THE ACTIONS OF THE MUSCLES.

All motions of which the eyeball is capable can be resolved into either rotation in the horizontal plane of rotation about the vertical axis or rotation in the vertical antero-posterior plane of rotation about the horizontal transverse axis, or a combination of the two. No position of the eye can be conceived which can not be arrived at by rotation about one or the other of these axes, or about first one and then the other. The analogy of the mathematical method of locating a point in space by its coördinates naturally suggests itself. For this reason we choose the vertical and horizontal antero-posterior planes of the eye as the only planes of rotation with which we concern ourselves in the study of those ocular movements whose mechanism it is necessary to understand. Each of the ocular muscles acting alone would produce a definite and constant movement of the visual axis of the eye in a plane called that muscle's plane of rotation and about an axis called that muscle's axis of rotation. The plane of action of any muscle is determined by three fixed points, namely, the center of its origin, the center of its insertion and the center of rotation of the eye. The axis of rotation of any muscle is a line passing through the center of rotation perpendicular to that muscle's plane of rotation. We find that the anatomic arrangement of the six ocular muscles is such that they may be considered in pairs, the two members of each pair being to a certain extent antagonistic in their action. To each pair belongs a common plane and axis of rotation. Of the internal and external recti, their plane of rotation is the horizontal plane of the eyeball, their axis of rotation the vertical axis of the eyeball. Of the superior and inferior recti, the plane of rotation passes outward from the apex of the orbit, where they arise, through the centers of their insertion on the upper and lower portions of the globe, and makes an angle of 27 degrees with the vertical antero-posterior plane of the eyeball. The axis of rotation of these muscles, therefore, makes an angle of 27 degrees with the equatorial plane of the eyeball. The superior and inferior obliques have to all intents and purposes corresponding points of origin at the inner angle of the orbit and corresponding points of insertion at the postero-superior and postero-inferior quadrants of the ball respectively. The plane of rotation of these muscles is vertical and makes an angle of 39 degrees with the equatorial plane of the eyeball, their axis of rotation making the same angle with the vertical antero-posterior plane of the eyeball.

The production of motion in a normal eye is denied to the oblique muscles. Neither voluntarily nor involuntarily is a normal eye ever rotated about its antero-posterior axis by the action of these muscles. The only such motion that we can demonstrate is that of so-called "false torsion" seen with the after-images of a bright line, and when this occurs it is due to the action of the vertical recti. The function of the oblique muscles is to prevent motion, not to cause it. With the question of torsion as produced by these muscles in abnormal eyes it is not the province of this paper to treat.

THE TERMINOLOGY OF MOVEMENTS.

The terminology of the ocular movements is in a state of considerable confusion. No two writers agree in their meaning for the same word. Thus, by duction, Maddox would imply any movement of the visual axis; Duane applies it only to movements of one eye; and Savage to the ability of the eyes to overcome a prism. It seems to me that this Section could well occupy itself with advising and stamping with its official approval a complete nomenclature of ocular movements. I would suggest as a temporary table at least, a sort of composite arrangement, as follows:

MOVEMENTS OF THE VISUAL AXIS.

A. Of a single eye (ductions).
   - *a.* Movements of the V. A. outward = abduction.
   - *b.* Movements of the V. A. inward = adduction.
   - *c.* Movements of the V. A. upward = superduction.
   - *d.* Movements of the V. A. downward = subduction.

B. Of both eyes.
   1. Associated conjunctive movements (versions).
      - *a.* Movements of both V. A. to right = dextroversion.
      - *b.* Movements of both V. A. to left = levoversion.
      - *c.* Movements of both V. A. upward = superversion.
      - *d.* Movements of both V. A. downward = subversion.
   2. Associated disjunctive movements (vergences).
      - *a.* Inclining the V. A. toward each other = convergence.
      - *b.* Inclining the V. A. away from each other = divergence.
      - *c.* Inclining one V. A. higher than the other = supervergence (right and left).

SPECIAL TERMS TO DENOTE THE EXTENT OF ASSOCIATED DISJUNCTIVE MOVEMENTS AS MEASURED BY PRISMS.

- *a.* Ability to overcome prisms bases outward = prism-convergence.
- *b.* Ability to overcome prisms bases inward = prism-divergence.
- *c.* Ability to overcome prisms bases downward or upward = prism supervergence (right and left).

Movements of the vertical axes only occur as a pathologic condition, and for this we already have a terminology, viz., cyclophoria (plus and minus) and cyclotropia (plus and minus). The use of the words coined by Maddox, intorsion and extorsion, may be justified to signify that we do not mean a pathologic condition, but what would occur if the vertical axis was capable of physiologic movements, or that we mean motion and not states. Thus, an eye undergoes intorsion, and becomes in a state of minus cyclotropia. Hence it is well to add:

MOVEMENTS OF THE VERTICAL AXIS (TORSIONS).

- *a.* Movements of the vertical axis outward = extorsion.
- *b.* Movements of the vertical axis inward = intorsion.

All of the ocular muscles are concerned in every ocular movement, either directly in producing the movement, or in preventing excessive movement, or movement in some other direction. Knowing the plane of rotation of each muscle we can state directly the effect of its action, and this can be quickly demonstrated and readily understood by performing the rotation on a model made of a rubber ball and knitting needles in imitation of Landolt's ophthalmotrope.

THE ACTIONS OF EACH MUSCLE.

The following table shows the principal and subsidiary action of each muscle acting on the eye in the primary position. It should be borne in mind that while the principal action of each muscle is aided by certain other muscles, its subsidiary actions are prevented by certain other muscles. This arrangement permits simpler movements of the eye than could otherwise occur.

MUSCLE.	PRINCIPAL ACTION.	SUBSIDIARY ACTION. (Not manifested under normal conditions.)
Int. rect.	Adduction	
Ext. rect.	Abduction	
Sup. rect.	Superduction.	Adduction and intorsion. Purely a superductor for eyes abducted 27 degrees.
Inf. rect.	Subduction	Adduction and extorsion. Purely a subductor for an eyeball abducted 27 degrees.
Sup. obl.	Intorsion	Abduction and subduction. Purely a subductor for an eyeball adducted 39 degrees. Purely an intortor for an eye abducted 51 degrees.
Inf. obl.	Extorsion	Abduction and superduction. Purely a superductor for an eye adducted 39 degrees. Purely an extortor for an eye abducted 51 degrees.

So much for the action of these muscles in producing various movements of the eyeball. It is well to observe that some of them aid in the production of several different motions. Thus acting on the eye in its primary position, the superior rectus and inferior rectus assist the interior rectus to adduct, while when the ball is abducted beyond 27 degrees they assist the exterior rectus in further abduction. It is of interest to note the correlated functions of the obliques and the vertical recti. As the eyeball is abducted these muscles almost change functions. From being primarily a superductor the superior rectus becomes for the adducted eye almost wholly devoted to intorsion, the primary function of the superior oblique while it loses its function as superductor, a function assumed in this position by the inferior oblique. Similarly, the inferior rectus assumes the function of extortor to an adducted eye, while the superior oblique subducts it. On the other hand, when the ball is abducted each of these muscles becomes more and more confined to its principal action.

FALSE TORSION.

These facts are so firmly established that they scarcely admit of discussion or argument. In fact, their recital before such a body as this is only permissible to round out the symposium on the ocular muscles. We may now approach what is really the one mooted point in the study of the physiology of the ocular muscles, namely, so-called "false torsion." By false torsion we mean the rotation of the eye on its antero-posterior axis which occurs when the ball is moved obliquely up and out, up and in, down and out, or down and in. Relying on the phenomena of after-images it has been taught that this rotation does occur and that it is due to the torsioning effect produced incidentally by the superior rectus and inferior rectus in connection with superduction and subduction. No one can question the fact that the after-images incline, but it has been pointed out by Savage that this inclination is slight and that it is only manifested when the conditions are such as to do away with the influence of the guiding sensation. When this faculty is allowed to act, as it is under normal conditions, it prevents the torsioning so that our visual judgments may remain true; that is, vertical lines still appear vertical and horizontal lines still appear horizontal. It seems that the condition is much the same as in heterophoria, where the tendency is for the visual axis to be so directed as to produce diplopia, but the desire for single vision is supreme and the muscles are compelled to overcome this tendency. It seems, therefore, that we must agree with Dr. Savage, that this torsioning effect does not occur, but is prevented by the action of the appropriate oblique muscles. As he says, this can be demonstrated on a person with favorably located corneal or conjunctival scars or other marks, and the testing of an astigmatic patient with the eyes turned in an oblique direction will show that no change in the axis of the cylinder is allowed; in other words, that rotation of the vertical corneo-retinal meridian has not occurred. Again, the parallelism between the image of an object and the vertical median plane of the head being necessary to convey to us the impression that the object is vertical, the parallelism between the vertical axis and the median vertical plane of the head must be maintained, or we would lose the ability to properly locate the direction of lines. This we do not do, no matter what may be the position of the eyes. Finally, if the oblique muscles do not perform this function, then we must confess that nature has supplied us with muscles far in excess of the work demanded of them, an error with which we would all be slow to charge her. Referring again to Savage, of what use other than to preserve the erect position of the vertical corneo-retinal meridian could oblique muscles be to a horse?

The movements of the visual axis of a single eye may be tabulated as follows:

1. Rotation around the vertical axis.

(*a*) Abduction, external rectus assisted first by superior and inferior oblique and later by superior and inferior recti.

(*b*) Adduction, internal rectus assisted by superior and inferior recti.

2. Rotation around transverse horizontal axis.

(*a*) Superduction, superior rectus assisted by inferior oblique, which also counteracts the torsion, and by internal and external recti later. The latter counteracts adduction.

(*b*) Subduction, inferior rectus assisted by superior oblique, which counteracts extorsion. Internal and external later. The latter counteracts adduction.

Oblique movements are simply compounds of the above. For instance, in looking upward and outward we may consider this as a movement, first upward and then outward. If this is true, then torsioning does not occur in oblique movements since it does not enter into the elementary movements of which the oblique movements are composed.

It is needless to repeat in detail the muscles concerned in turning the two eyes in a given direction. For instance, in looking to the right (dextroversion) we have but to employ the muscles of the right eye which abduct it (external rectus, inferior and superior oblique, and later, superior and inferior recti), and those of the left eye which adduct it (internal rectus, superior and inferior recti). The muscles not directly concerned in the production of the required motion are occupied in preventing motion in any other direction. Thus, in this motion, the visual axes are kept in the same horizontal plane by the superior and inferior recti, and the vertical axes are kept parallel by the obliques.

The law governing the motion of the eyes is stated as follows by Savage: "The recti muscles must control the visual axes, the superior and inferior recti, keeping them always in the same plane, the internal and external recti making them intersect at the point of fixation. The obliques must keep the vertical axes parallel with each other and with the median vertical plane of the head.

Randolph Building.

DISCUSSION

ON PAPERS OF DRS. COLBURN AND ELLETT.

DR. G. C. SAVAGE, Nashville, Tenn.—The attention given to the reading of Dr. Ellett's paper shows the deep interest this assembly feels in the study of the physiology of the ocular muscles. He speaks clearly and strongly on some points that need not longer be matters of controversy. I agree with Dr. Ellett in every particular except that of nomenclature, and even on this point we are not widely separated in our views. Of this difference I shall have something to say later. There

are some points of vital importance in the study of ocular rotations not included in the paper, probably because of the time limit for its presentation. First of these is the law of corresponding retinal points, which is the supreme law of binocular rotations. Before light has ever entered the eye, in the process of development, the parts of the two retinas that correspond are fixed. It is not any more certain that the maculas are predetermined, according to a law which we may never understand, the law of retinal development, than it is that the vertical and horizontal retinal meridians are also predetermined by the same law. This means, of course, that all other meridians are likewise predetermined in the process of development. If development has been normal, the macula of one eye corresponds perfectly with the macula of the other; the vertical meridian of one eye corresponds, point for point, with the vertical meridian of the other eye; and the horizontal meridian of the one eye harmonizes perfectly, point for point, with the horizontal meridian of the other. Any meridian, in the one eye, bearing a definite relationship to the vertical and horizontal meridians, must correspond, point for point, with that meridian of the fellow eye that is similarly related to its vertical and horizontal meridians.

One of the purposes of the existence of the ocular muscles is to so relate the eyes to the fixed vertical and horizontal planes of the head that our visual judgments may be correct; the other purpose is that the two eyes may have their corresponding parts so related to each other as to give single vision, notwithstanding double images. That both purposes may be accomplished the twelve ocular muscles, attached to perfectly developed eyes, must obey the simple law quoted by Dr. Ellett in closing his paper. If the accomplishment of binocular single vision were the only duty assigned to the ocular muscles, and it is the only duty so far as the recti are concerned, the latter part of the law could be made to read: "The obliques must keep the vertical axes of the eyes parallel with each other." Our visual judgments, however, depend on parallelism of the vertical axes of the eyes with each other and with the median plane of the head, hence the completeness of the law quoted by Dr. Ellett.

There are, then two axes of each eye with which the muscles are concerned, the visual axis and the vertical axis. It is strange, and yet true, that errors in the location of these axes were perpetrated in the remote past and have been perpetuated down to the present. I do not know who it was that constructed the antero-posterior axis—the so-called optic axis of the eye—by beginning at the central point of the cornea, making this the anterior pole, carrying it back through the center of rotation, thence on to the retina to a point between the disc and macula, 5 degrees or more from the latter, and named this point the posterior pole. The equatorial plane, which contains both the vertical and the transverse axes of the eyes, was supposed to be at right angles to the so-called optic axis. Doubtless the same man then constructed the visual axis, starting at the macula, carrying it forward to the outer side of the center of rotation, but through the nodal point, and then making it cut the cornea to the nasal side of the anterior pole. Whoever he was, he was wrong, and authors who have repeated this error are wrong. I would not so speak if I did not believe that I can prove to the satisfaction of every listener that what I am about to say is correct. Do you doubt that the central point of the macula is the posterior pole? Then you must doubt that the retinal meridians all cross each other in the fovea centralis. If the fovea is the posterior pole, then the visual axis as it passes through the center of rotation, to a point in the cornea, usually to the nasal side of its center, must be the antero-posterior axis of the eye, and the anterior pole must be that point of the cornea through which the visual axis passes. The corneo-retinal meridians are one and the same. Meridians are great circles that cross each other at two points just 180 degrees apart. If one of these points is the central point of the macula, and no one will controvert this, the other point must be located on the corneal surface by the visual axis, and not by the so-called optic axis. Therefore, the equatorial plane which contains the vertical and transverse axes of the eye must be at right angles to the visual axis, and not at the angle of 85 degrees or less.

Würdemann, by his drawing on the board before you, has located the posterior pole. I have located the anterior pole at the corneal point cut by the visual axis. That this is correct and the retino-corneal meridians are one and the same is shown by Javal's ophthalmometer every day. We make the patient look into the center of the tube, his end of the telescope, therefore his visual axis, passing through a definite point of the cornea, cuts the center of the tubal opening. The meridians we measure are lines passing through the corneal point cut by the visual axis. (This explains the well-known fact that corneal astigmatism according to the rule is greater than the total astigmatism.)

The rotation plane of the individual muscle has been described by Dr. Ellett. The plane of every rotation, whether the rotation be in one of the cardinal directions or in any oblique direction, is the plane that passes through the macula, the center of rotation of the eye, and the first and second points of view; hence the eye in passing from the first to the second point of view causes its visual axis to move in this plane. The axis of every rotation lies in the equatorial plane of the eye. This statement would have been made by Helmholtz but for the fact that his understanding of the location of the equatorial plane, at right angles to the so-called optic axis, was erroneous. The rule he gave us for finding the location of the axis of any rotation is perfect. In substance it is: Construct a plane which shall contain the visual axis in its first and second positions; at right angles to this plane construct two other planes, one containing the visual axis in the first position, and the other, the visual axis in the second position. The first plane may be named *a*, and the other two *b* and *c*. The line of intersection of planes *b* and *c* passes through the center of rotation, at right angles to the visual axis as it moves in plane *a*, and is the axis around which the rotation has occurred. This axis lies in the true equatorial plane, but not in the equatorial plane, as Helmholtz understood it. As to Listing's plane, I will only say that it is as useless as his law of oblique rotations is erroneous.

Every harmonious rotation of the two eyes is effected by one or more of nine conjugate brain centers. Five of these are voluntary centers and, therefore, are located in the cerebral cortex, while four are involuntary, and may or may not be located in the cortex. The five voluntary centers control the recti; the four involuntary centers control the obliques. For convenience it is better to know these centers by numbers, first, second, third, etc. Each of these centers is connected with a pair of muscles, one belonging to each eye. The first conjugate center controls the action of the two superior recti; the second, the action of the two inferior recti. These two centers, acting in perfect harmony on normal muscles, keep the two visual axes in the same plane regardless of the point of view. The third conjugate center is connected with the two interni, and is the convergence center. There may, or may not, be a divergence center, but certainly under a nerve impulse the externi help to regulate the visual axes so that they may intersect at the point of fixation. The fourth conjugate center has control of the right externus and the left internus, and it calls these muscles into action when the point of fixation is cardinally to the right. The fifth conjugate center controls the left externus and the right internus, and calls these muscles into action when the point to be viewed is cardinally to the left. These centers are concerned only with the visual axes. But it is not more necessary that the visual axes be properly controlled in the interest of binocular single vision, than it is that the vertical axes shall always be kept parallel with the median plane of the head and with each other, in the interest of visual judgments as well as in the interest of binocular single vision. That the parallelism may be maintained or, in other words, that there may never be rotation around the visual axis, there are the four conjugate centers for the oblique muscles. Every one of these is connected with two muscles, one belonging to each eye, and they are not under the control of the will.

When the second conjugate center subverts the eyes, the vertical axes would be tilted out but for the sixth conjugate

center which sends an impulse to the two superior obliques that they may prevent loss of parallelism between the vertical axes and the median plane.

When the first conjugate center superverts the eyes the vertical axes would be tilted in, except for the seventh conjugate center which sends an impulse to the two inferior obliques. These muscles steadily keep the vertical axes of the eyes parallel with the median plane of the head, as the visual axes are made to move upward.

When the point of view is up and to the right, it is reached by the visual axes through the combined action of the first and fourth innervation centers on their respective muscles; or if the point of view is down and to the left, it must be reached by the visual axes as a result of the influence of the second and fifth conjugate centers over their respective muscles. But the visual axes could not be turned in either of these directions, by the proper recti muscles, without such a torsioning effect on both eyes as to make their vertical axes lean towards the right, however, to the same degree. Although the vertical axes would still be parallel with each other, if the torsioning occurred, they would not be parallel with the median plane of the head. If this torsioning were not prevented everything in the field of vision would be made to incline an equal number of degrees to the left, as shown by the study of after images. In such oblique rotations the eighth conjugate center, acting on the right superior oblique and the left inferior oblique, maintains parallelism between the vertical axes and the median plane.

When the point of view is up and to the left, it must be reached by the visual axes through the influence of the first and fifth conjugate centers on their respective muscles; and if down and to the right the result is accomplished through the second and fourth conjugate centers. To prevent the leaning of both vertical axes towards the left, the ninth conjugate center calls into a steadying action the superior oblique of the left eye and the inferior oblique of the right, that these axes may not lose parallelism with the median plane of the head.

Through the voluntary and reflex centers in the brain, the guiding sensation, resident in the retina, is the master of all the ocular muscles. By it well-adjusted muscles are easily and perfectly controlled, in the interest of binocular single vision and of many visual judgments.

As to the nomenclature: There are two kinds of action for every rectus muscle, one of which is effected by the will while the other is effected reflexly. The former should be called the verting power while the latter should be called duction power. Verting applies to both eyes equally, duction applies to only one eye, but there is no longer any duction power when the vision of one eye has been destroyed.

DR. GEORGE M. GOULD, Philadelphia—I have just a single word to interject: I noticed a few years ago and have noticed many facts in proof of it since, that we are right-eyed or left-eyed habitually, just as we are right or left handed. That has some bearing on this matter of the physiology of the ocular muscles, and especially in reference to certain refraction problems.

DR. LUCIEN HOWE, Buffalo, N. Y.—I do not think such an important subject should be passed by the Section without question. There is so much to be said about it, however, that it can hardly be more than touched on in the limited time. I think we are hardly prepared to be obliged to give up our principles at once. When the angle alpha is zero and when the visual and optical axes correspond, of course, we have this condition, but as for saying that it is the case invariably, that is contradicted by actual demonstration. As to the question of "false torsion," that is a matter of demonstration, too; not only a question of existence, but of degree. We must not be misled in this way. As to saying that this one single muscle controls one single motion, and this other muscle another motion, we can not do that.

DR. W. R. PARKER, Detroit—I would emphasize that in handling the ocular muscles from a practical standpoint, an important thing to remember is that in every movement all the muscles may be involved and it is only by studying each one and noting its action that we can arrive at any definite conclusion as to error and treatment. The part taken by any particular muscle may be active or passive. We can have a horizontal error only when the vertically-acting muscles are normal.

DR. FRANCIS VALK, New York—I have listened intently to Dr. Ellett's paper and hoped he would give a little more information about the movements of the eye in the orbit. I am inclined to look on the matter from a practical point of view and object to the statement that when we consider movement of the eye we must consider all the muscles. There are two movements of importance: first, the movement of turning the eye up and down and in and out. Here the physiologic act that takes place requires very little force, the weakest muscle will move the eye into any position in the orbit. Then we come to the other movement; the field of duction and nature has taken this into consideration and if you examine physiologically and anatomically you find that nature has placed the muscles so and made them of such a size that they exactly correspond with the field of duction. The internal rectus is largest and its insertion is better; the external rectus comes next, and then the inferior and superior recti. It is this field of duction that is the important point in the movement of the eye and in binocular vision and unless we take that into consideration we can not study binocular vision.

DR. COLBURN, in closing—I shall be greatly obliged to Dr. Howe if he will send me the citations which he mentions. All that I am able to find relate only to the size and shape of the cavity of the orbit. At the Field Museum, department of anthropology, the busts and masks are arranged to show different types of various peoples and afford an excellent opportunity to study the pose of the head. The skulls are well arranged to facilitate the study of the relation of the axes and planes of the orbit to the plane of the face and the carriage of the head. Asymmetrically placed orbits seem to favor the production of heterophoria.

DR. ELLETT, in closing—If any one understood me to say that any one motion of the eye is accomplished by a single muscle they misundertood me; nor did I consider abnormal attachments of the muscles, but only average attachments. In regard to Dr. Valk's remarks, it was very difficult to speak of some of the matters because they are such every-day affairs and I did not consider it necessary.

THE ASSOCIATION OF GRAVES' DISEASE WITH GLYCOSURIA AND DIABETES MELLITUS.*

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Glycosuria as a concomitant of Graves' disease may occur: 1. As alimentary glycosuria. 2. As spontaneous glycosuria. 3. As diabetic glycosuria.

Actuated by the occurrence of transitory glycosuria, especially of the alimentary type *e saccharo,* in 69 per cent. of his cases of Graves' disease, Chvostek[1] considers glycosuria almost a symptom of the latter affection. A similar frequency of this association was also met with by Kraus and Ludwig,[2] who occasioned glycosuria in 4 out of 6 instances of exophthalmic goiter. In the experience of other clinicians, however, alimentary glycosuria *e saccharo* is by no means so frequent a phenomenon in Graves' disease. Strauss[3] found it in 3 out of 19 cases of the affection; Naunyn[4] could produce it but in one of his numerous cases of Graves' disease at the Strassbourg clinic; among 8 cases of the malady out of a total of 10 which have come under my observation during the last two years, alimentary glycosuria *e saccharo* could be demonstrated in one instance only. The assimilative power for glucose of these eight patients was

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. Frank A. Jones, George Dock and J. M. Anders.

to be determined by the ingestion into the empty stomach of from 60 to 200 grams of chemically pure glucose. In the one positive instance glycosuria was induced after the introduction of 75 grams of grape-sugar; three hours after its ingestion 220 c.c. urine containing 0.92 per cent. glucose (by fermentation) were voided; 2½ hours later 180 c.c. with 0.57 per cent. glucose (by fermentation), and after another 3 hours 190 c.c. with 0.17 per cent. glucose (by fermentation) were excreted. The urine passed 11 hours after the introduction of grape-sugar did not reduce Fehling's or Almen's solutions. Hence, the ingestion of 75 grams of glucose was followed by the excretion of 3.373 grams of urinary glucose. The proportion of 3.373 grams egested to 75 grams ingested glucose points to the fact that the assimilation limit had been hardly surpassed. Moreover, it was not the severity of Graves' disease which induced the glycosuric phenomenon, for while the characteristic symptoms of the affection in this particular case were gradually subsiding, they continued in almost every one of the remaining seven cases in which glycosuria could not be effected, and this in spite of the fact that every one of the eight individuals was under the same general hygienic and medicinal treatment. This patient, a woman, like the great majority of those afflicted with exophthalmic goiter, was 38 years old and had the disease for about one year when first seen. She remained for months under my observation.

In my experience diminution of the assimilative power for glucose in Graves' disease is not any more frequent than in a variety of gastrointestinal disturbances. In a series of 42 consecutive cases of gastric hyperacidity, for instance, in which the total acidity amounted from 40 to 92 per cent., I found 5 cases, that is, almost 12 per cent., in which the urine after the ingestion of 100 grams of glucose exhibited marked reducing qualities.

Although Goldschmidt's[5] figures do not concur with those of Chvostek, he found that alimentary glycosuria ensued more frequently in patients affected with morbus gravesii than in healthy individuals. His observations are based on the study of 17 cases of exophthalmic goiter. From 100 to 150 grams of glucose dissolved in 500 c.c. water were given them in the morning. Of 5 patients who had taken 100 grams glucose, but one exhibited glycosuria (2 per cent.) for two hours; of the 12 patients to whom 150 grams glucose were given two excreted glucose by the urine, the one 1.5 per cent., the other 0.3 per cent. He opines that alimentary glycosuria appears as often in traumatic affections of the nervous system as in Graves' disease. In patients afflicted with a traumatic neurosis, Mendel[6] found decreased tolerancy for glucose in 22 per cent., and Strauss (loc. cit.) with 100 grams glucose on the empty stomach, in 14 out 39, that is, in 36 per cent. of the cases.

The non-occurrence of alimentary glycosuria *e saccharo* in most cases of exophthalmic goiter does by no means preclude its eventual interrelation with this affection. A number of instances have been related in which spontaneous, transitory glycosuria is said to have appeared in the course of Graves' disease. A study of the records of these cases evinces, however, that these instances of supposed transitory glycosuria, with the exception of some of Chvostek's and Kraus' and Ludwig's cases, were nearly all of diabetic glycosuria.

Among the ten cases of morbus gravesii which came under my observation during the past two years, there was one in which the condition of true spontaneous glycosuria obtained. The patient, a negress, 41 years old, a nurse by occupation, called at my clinic on April 29, 1901. She gave the following history:

She arrived in New York City from Virginia but a few days before. She felt weak for the last three years and noticed that she was growing weaker from day to day. Her trouble began with palpitation of the heart; she suffers from a distressing cough, more so on standing than when being in the recumbent position. Occasionally she experiences attacks of dyspnea. About a year ago she noticed first protrusion of the eyeballs and at about the same time enlargement of the thyroid. She gave no history of excessive thirst or polyuria. An examination revealed the presence of the four phenomena characteristic of Graves' disease—tachycardia, thyroid enlargement, exophthalmos and involuntary muscular tremors. Besides these, she exhibited symptoms of lung disease which after examination of the sputum proved to be tubercular.

The urine voided at the clinic possessed a specific gravity of 1023; contained 1.8 per cent. of carbamid, some acid albumin and glucose (Fehling, Nylander, Penzoldt-Rubner). The urine passed six hours later contained 0.8 per cent. of glucose (fermentation). All the urine voided thereafter and subjected to analysis did not contain any glucose although the patient continued on a diet relatively rich in carbohydrates. The specific gravity of the blood at the first examination amounted to 1052, and a week later to 1048.5. At no time did it exhibit the tinctorial phenomenon of Bremer. The malady came to a fatal issue in the latter part of May, 1901.

This case was undoubtedly one in which the glycosuria was of the spontaneous, transitory type. The nonrecurrence of urinary glucose after an unaltered, starchy and sugar-containing diet, excludes the supposition of alimentary as well as of diabetic glycosuria. The patient perished of the original disease, by heart paralysis; the tubercular process was not far enough progressed to have been more than a contributory toward the rapid dissolution; diabetic phenomena, however, had not at all ensued at any time while she was under my observation.

The association of Graves' disease with diabetes mellitus seems to occur somewhat more frequently than that with spontaneous glycosuria. The coincidence of these conditions may be threefold, that is, exophthalmic goiter may arise during the course of diabetes mellitus, or it may be contemporaneously produced with it, or the appearance of the diabetic phenomena may be subsequent to that of Graves' disease.

A case in which diabetes mellitus existed before the advent of Graves' disease was reported by Hartmann.[7] An unmarried woman, 32 years old, was affected with simple goiter for 13 years when diabetes ensued. After this had continued for one year, the struma became enlarged, and after another year the symptom-complex of morbus gravesii was fully established. A case belonging into this category was described by Schmidt,[8] in which a laborer, 37 years old, who had been subjected to diabetes for some time, developed all the symptoms of morbus gravesii with the exception of the goiter. Grube's[9] patient, a female, aged 50 years, on being informed that she excreted 9 per cent. of glucose by the urine, experienced an extreme shock which she considers the causative factor of the now appearing syndrome of Graves' disease.

Cases in which Graves' disease appeared simultaneously with diabetes mellitus were related by Dumontpallier,[10] O'Neill,[11] Bettmann,[12] Grawitz,[13] and Osterwald.[14] O'Neill's patient was a woman, 42 years of age, in whom both affections occurred in very pronounced form. The case terminated lethally. Bettmann's case, which with some justification may be enumerated among the following subdivision, because thyroid enlargement and exophthalmos were present for some years when diabetes

supervened, was observed by him at Erb's clinic in Heidelberg. However, as the heart symptoms completing the clinical picture of morbus gravesii ensued synchronously with the diabetic phenomena, the instance in all probability belongs to this group. It was a woman, 54 years old, who excreted glucose to the amount of 4.5 per cent. That both affections were interdependent was evidenced by their further course. Grawitz's observation was made in a neuropathic female servant, 22 years of age. The conditions, both of which were well pronounced, started simultaneously. At the height of the glycosuria 162 grams of glucose were excreted in 24 hours. Osterwald's case was under observation at Ebstein's clinic in Göttingen. The patient, a girl, 18 years of age, who was never ill before, had menstruated only once when she was admitted to the hospital. Both affections had ensued at the same time. Under an antidiabetic regimen the patient improved somewhat, although acetone and diacetic acid were persistently exhibited in the urine. As much as 444 grams of glucose were discharged by the urine in one day.

Instances of the association of both morbid states in which diabetes did not occur until Graves' disease was fully established, or had pre-existed for some time, were reported by Wilks,[15] Lauder Brunton,[16] Hartmann (loc. cit.), Fischer,[17] Barnes,[18] Budde,[19] Cohen,[20] Kleinwaechter,[21] Mannheim,[22] Hannemann,[23] Revilliod,[24] Lannois[25] and Osterwald (loc. cit.).

Wilks' observation was made in a woman 44 years old. Urinary glucose fluctuated between 1 and 3 per cent. Antidiabetic diet did not materially influence the excretion. The appearance of diabetes was followed by decrease of the goiter. Lauder Brunton's patient was a female domestic, aged 43. A traumatic condition probably stood at the foundation of the exophthalmic goiter and the subsequent diabetes. The patient soon perished. Hartmann's second case occurred in a female, who developed Graves' disease when 21 years old. Diabetes ensued ten years afterward, during a period of gestation. Glucose was discharged in amounts of from 3 to 6 per cent.; also after parturition. This case also died.

The case related by Fischer occurred in a woman aged 40 years, and that reported by Barnes in a woman 34 years old. In this case, which came to a fatal issue, diabetes first appeared 2½ years before she came under observation. This was 2½ years after the onset of Graves' disease. Budde encountered two instances of the combination. The first was that of a woman in her 54th year of life, in whom diabetes evolved two years after completion of the syndrome of morbus gravesii, and in whom death supervened in coma; the other case was that of a girl, 24 years old, who excreted but small amounts of sugar, which disappeared on the institution of an antidiabetic regimen. Cohen's case, a female patient, 42 years old, had also symptoms of tabes dorsalis. She excreted 2.9 per cent. of glucose. This case is very likely identical with that described by Mannheim a year later. Both authors worked under Mendel. However, the tabic symptoms had disappeared before Mannheim had seen the case.

Kleinwaechter investigated a case of Graves' disease of four years' duration in a woman 23 years old. He found atrophy of the mammæ and of the right ovary. The urine contained 1 per cent. of glucose. The glycosuria was diabetic. Hannemann reported a case of a woman, aged 31 years. Nine years previously she had developed Graves' disease, which progressed but little during this period. Diabetes supervened abruptly. Glucose occurred to the amount of 1.8 per cent. Two weeks after the onset of the diabetic phenomena death ensued in coma. Revilliod's observation was made in a woman 59 years old. Besides the two affections, he found also hyperemia of liver and spleen. Glycosuria concurred with albuminuria and phosphaturia.

Lannois described two instances, both of which occurred in females and terminated fatally. One patient was 36 years old; she died in coma. The other, who was in her 53d year, had a small goiter since childhood; this became enlarged ten years ago. For the last six years exophthalmos was present. Two years afterwards, when Graves' disease was fully established, the urine exhibited albumin, acetone and about 3 per cent. of glucose.

The history of Osterwald's second case is of interest as morbus gravesii, which had prevailed and subsided, again appeared after twenty years on the occasion of some lung affection. The patient, a woman of 40 years, soon after the last occurrence of Graves' disease developed diabetes. She voided as much as 4 liters of urine, containing 7 per cent. of glucose per diem. An improvement of the diabetic symptoms was noted on an antidiabetic regimen.

The last of the ten cases of morbus gravesii which came under my observation was associated with true diabetes, which arose secondary to the former condition. It occurred in the practice of Dr. E. J. Palmer of New York City, with whom I have seen the case in consultation on different occasions. As far as I am aware, it is the only case of its kind which has been observed in this country:

Mrs. C. L., whose family and previous personal history is negative, in 1898, when 54 years old, experienced a severe shock which was soon followed by morbus gravesii. Heart symptoms, exophthalmos, thyroid enlargement and especially the nervous phenomena were very pronounced. Graefe's sign was present, and ulcerative keratitis prevailed for some time. The patient, whose weight had always been in the neighborhood of 78 kilograms, became rapidly emaciated. Muscular weakness was extreme. Traces of albumin were detected in the urine. Under prolonged thyroid medication the patient recovered almost entirely. She regained almost all of her lost weight, became stronger; exophthalmos and thyroid enlargement disappeared. Excepting some tachycardia the heart symptoms had also subsided. Early in October, 1901, there was a recurrence of the exophthalmic goiter. Combined with it, there appeared symptoms of diabetes, as polydipsia, polyphagia, polyuria and glycosuria.

I first saw the patient on Dec. 23, 1901. I found her greatly agitated and restless and in a state of slight mental disturbance. She had lost about twenty kilograms in body weight since October. She has had numerous attacks of vomiting during the last few weeks, and is generally constipated. She complains of intense dryness in the throat and of flatulence.

Examination.—The general appearance indicated a far-advanced cachexy; pallor eximius was very pronounced; she could not stand without assistance; extremities were very lean; muscles and abdomen soft and flaccid; patellar-reflex and ankle-clonus were diminished. The temperature amounted to 37.2 degrees C. by the rectum.

Cardiac and Vascular Systems.—Visible cardiac pulsation in fourth interspace. Increased area of cardiac dulness extending transversely for fourteen centimeters and pointing to a hypertrophic condition. The frequency of the heart's action amounted to 118 beats per minute; the heart impulse was decidedly increased. There were distinct systolic murmurs at the base and apex of the heart. Similar murmurs were heard in the carotids and in other great blood vessels. The arterial pressure sphygmomanometrically ascertained amounted in the left radial artery to 160, and in the right radial artery to 135 milligrams of mercury.

Thyroid Gland.—The enlarged thyroid body measured transversely about nine centimeters. Both lobes of the thyroid participated in the enlargement; the right one, however, more so than the other. Their arterial pulsation was plainly visible and also noticeable on palpation. The gland felt hard.

Eyes.—Exophthalmos was very pronounced. The left eyeball protruded somewhat more than the right. There was slight bilateral ulceration of the cornea. The signs of Graefe and Moebius were present.

Other Organs.—The lungs did not exhibit any symptoms of organic disease. The stomach was slightly dilated; pressure on the pyloric region occasioned pain. The liver, palpable below the arch of the ribs, was hyperemic and tender; the spleen was slightly enlarged. The other abdominal viscera seemed normal.

Urinalysis.—The results of my first urinary examination, as well as all those derived at by subsequent analyses, are incorporated in the following table. Glucose was searched for by Nylander's method; its quantity was determined by Fehling's test, or by fermentation in my urino-glucosometer.

Date.	Quantity of Urine for 24 Hours; c.c.	Specific Gravity at 15.5° C. 1000+	Acidity; degrees.	Total Solids; grams.	Carbamid.		Glucose.		Acetone.*	Diacetic Acid.*	Indoxyl Potassium Sulphate.*
					Per cent.	Grams.	Per cent.	Grams.			
Dec. 24.	5600	13.5	0.17	176.18	1.4	78.4	0.46	25.76	++++	++	++
" 25.	5100	16	0.2	290.13	1.7	86.7	0.69	35.19	++++	++	++
" 26.	5250	15.	0.18	183.49	1.3	68.25	1.15	60.38	+++	++	+
" 27.	7500	12.	0.09	209.7	1.1	82.5	0.9	67.5	+++	++	+
" 28.	6250	10.	0.14	145.63	0.9	56.25	0.75	46.88	+++	+	N.
" 29.	5000	8.25	0.22	96.1	1.05	52.5	0.23	11.5	++	+	N.
" 30.	3250	10.5	0.29	79.53	1.4	45.5	0.15	4.88	++	+	N.
" 31.	3180	11.	0.32	81.5	1.25	39.75	0.2	6.36	++	++	N.
Jan. 1.	3350	9.75	0.26	76.1	1	33.5	0.34	11.39	+	+	N.
" 2.	3200	11.	0.31	82.	1.15	36.8	0.4	12.8	+	+	N.
" 3.	3600	12.5	0.28	104.89	1.3	46.8	0.69	24.84	++	++	N.
" 10.	3470	12.	0.29	97.	1.2	41.64	0.55	19.09	++	+	+
" 26.	4100	11.5	0.25	109.88	1.3	53.3	0.52	21.23	++	++	+
Feb. 19.	4500	13.25	0.22	138.92	1.45	65.25	0.8	36.	++	++	+
" 20.	4200	11.75	0.21	115.	1.2	50.4	0.63	26.46	++	++	+
" 21.	4050	12.	0.24	113.24	1.05	42.53	0.75	30.38	++	++	+

* N. = normal; + = increase; ++ = great increase; +++ = very great increase.

The diet was mixed regimen, proteids predominating, milk.

The medication was: Sodium bicarbonate, 20 to 30 grams per diem. After five or six days' employment, this was discontinued by the patient. Also four tablets every day of the following: Thyroid powder, 0.12; acid arsen., 0.001; adonidin, 0.005.

An examination on February 19 evinced the progressive weakness and emaciation of the patient, whose body weight in the meantime had declined to about 40 kilograms.

Blood Examination.—An examination of the blood made by me on February 19 showed the following:

BLOOD EXAMINATION.

ALCALESCENCE: =266.5 milligram NaHO in 100 c.c. blood.
SPECIFIC GRAVITY: 1039.5.
HEMOGLOBIN: 44 per cent.
BLOOD COUNT { Erythrocytes = 2,240,000 in 1 c.mm. blood. Leucocytes = 18,000 in 1 c.mm. blood. Proportion, erythrocytes to leucocytes = 124 : 1.
EXAMINATION OF COVER-GLASS PREPARATIONS:
Bremer's reaction; negative.
Hyperleucocytosis of lymphatic, polynuclear-neutrophile character. Distinguished; normal erythrocytes, blood plates, small lymphocytes (large amount), large lymphocytes, polynuclear neutrophiles (large amount), eosinophiles.

The patient grew weaker from day to day. She experienced no pain. Jactitation became gradually diminished. On February 27 she expired from exhaustion.

This case resembles somewhat the second one observed by Osterwald, inasmuch as the cardinal symptoms of Graves' disease had more or less vanished, and that diabetes supervened only when a recurrence of the original affection ensued. The comparatively rapid subsidence of the first condition of hyperthyroidism seems to have been due, in a measure at least, to thyroid medication. In the second attack, when diabetes occurred as a complication, thyroid therapy remained without apparent influence on the prevailing conditions. The clinical pictures of morbus gravesii, as well as of the diabetic state, were perfect already when I first saw the case. There were some days, to be sure, on which the patient felt decidely stronger. Both affections, however, remained almost stationary while the patient, gradually but inevitably, wasted away.

The dietary regimen to be pursued in the treatment of the associated conditions leaves one in a great dilemma. A rigid proteid-fat alimentation as is imperative, for some time at least, for the rational treatment of diabetes mellitus, was not well borne in most all of my cases of exophthalmic goiter. While, theoretically, the body-albumin saving proteid-fat diet appears to be the indicated regimen in hyperthyroidism, it does not, as a matter of fact, prevent albumin disintegration to any extent in that affection. At least, this is my experience. The best results are here obtained by the institution of a mixed diet. As the glycosuria was one of a lesser degree, a strict antidiabetic regimen was not insisted on in this instance. Milk, of which from 750 to 1500 c.c. were ingested during the 24 hours, constituted the bulk of the nourishment. It is probably due to this fact that the glycosuria never ceased entirely.

The administration of 0.48 gram of powdered thyroid gland per diem modified by arsenious acid, was rapidly followed by an increase of urinary glucose from 25.76 grams on December 24, to 35.19, 60.38, 67.5 and 46.88 grams, respectively, on the four succeeding days. On December 29 the amount of excreted glucose declined abruptly to 11.5 grams. The lowest diurnal quantity which the patient discharged was 4.88 grams. This occurred on the following day. On December 31 the glucose output increased to 6.23 grams, January 1 to 11.39 grams, on the next day to 12.8 grams; January 3 it had reached 24.84 grams. A week later the glycosuria was somewhat less intense; February 19 the glucose elimination had again been augmented to 36 grams. From December 29 to January 2, the period of diminished glucose excretion, the patient felt particularly bright and cheerful, although there was no decided improvement in her strength. Polydipsia was less pronounced during these days, which was enunciated by the diminished secretion of urine. Inasmuch as the diet had not been materially altered during these five days, the lesser degree of glycosuria and the concurring diminution of the diabetic and nervous phenomena might be ascribed to the thyroid-arsenic medication. The change for the worse, taking place subsequently when the patient was under the same medication and substantially the same regimen, was in reality nothing else than the direct continuation of the glycosuria as it existed prior to December 25, that is, prior to the thyroid-arsenic influence. The dose of the powdered thyroid, it is true, was rather small; due consideration, of course, had to be taken of the general condition, and especially of the heart. For this purpose adonidin to the amount of 5 milligrams was added to each tablet. The powdered thyroid at first stimulated and increased the thyroid activity in the organism; besides the greatly increased output of glucose, this is shown by the rather augmented quantities of carbamid. After a few days only the perverted action of the thyroid gland was subdued to the extent that carbamid was eliminated in about half the amounts as before and that the sugar output decreased materially.

The subsequent return to the condition prevailing before the institution of thyroid medication was probably due to the ineffectiveness of the drug to hold in check the perverted functional activity of the thyroid gland. Acetone and diacetic acid were found in every specimen of urine examined. The first was tested for by sodium nitroprussiate and NaHO solution and the

I, KI, KHO method was applied as a control test. Diacetic acid was examined for by Gerhardt's reaction. The period of diminished glycosuria was also that of reduced acetonuria and diaceturia. Albumin, which is said to have occurred on the first occasion of Graves' disease, could not be detected in the urines of the later attack.

A perusal of the various instances of spontaneous and diabetic glycosuria in association with hyperthyroidism as recorded in the foregoing evinces the following facts:

A. The greater frequency of the associated conditions in the female sex.—Of the 24 specified instances of the combination of Graves' disease and glycosuria, two occurred in males and 22 in females. That is in the proportion of 1 in the male to 11 in the female. While hyperthyroidism occurs in the female sex in the proportion of 4 to 1 as compared with males, this proportion is tripled if it occurs in association with the glycosuric phenomenon.

B. The age at which the association ensued.—The age at which the patients came under observation was not always the one at which the association occurred. In some instances, I dare say, the observers themselves could not fix a definite period at which it had taken place. The youngest patient was 18, the oldest 59 years old. The average age at which the combination ensued must have been in the 39th year of life. From 12 to 14 of the 22 cases in females occurred at or near the period of cessation of menstrual life.

C. Prognosis and termination.—Complete subsidence of all the symptoms of the associated affections did not occur in a single instance. A partial improvement, at least for the time being, took place in one or two cases. A number of the cited instances were recorded soon after the association had supervened. If these reports would have been made at some later period and not so soon after the association was detected, they would be of greater value to us in determining the final termination. Of the 24 cases 10 are reported to have perished while still under observation. Definite statements as to the period which had elapsed between the outset of the complication and the lethal termination seem to have been made in six instances only. Thus, Budde records one year, Barnes two and a half years, Hannemann two weeks, Lannois four years, and in my cases the patients lived for four weeks and for five months respectively.

I can not concur with observers like O'Neill (loc. cit.), Von Noorden,[26] Leo,[27] Hirschfeld,[28] and two or three others, according to whom the association of Graves' disease and glycosuria or diabetes is merely an accident, not denoting an interrelation between the two conditions.

The infrequency of the concurrence of the two affections justifies this assumption to a certain degree. Leaving out of consideration alimentary glycosuria *e saccharo*, which may be induced just as often during the prevalence of certain neuroses and alimentary disturbances as in the presence of Graves' disease, ignoring also the exceedingly rare combination of the latter affection with spontaneous glycosuria, disregarding even the instances in which diabetes appeared before exophthalmic goiter had ensued, there are some well-authenticated cases on record in which both conditions were produced synchronously, that is, in which the appearance of one pathologic state was dependent on that of the other, or in which they were both dependent on the presence of one common morbific factor; and there are also those instances in which Graves' disease occurred first and diabetes afterward, and in which decline or exacerbation of the one condition was reflected on the other. Furthermore, the production or intensification of glycosuria, occasionally following the administration of thyroid extract or iodothyrin, tends to evince the interrelationship of the coexisting affections.

Again, if we agree with Strauss (loc. cit.) that thyroid preparations produced glycosuria in such individuals only who were predisposed to it (my own experience confirms this assumption to some degree), it does not exclude the interdependence of the two concurring affections. It gives even further support to the view, that hyperthyroidism, under certain conditions, is productive of grave disturbances in the metabolism of the carbohydrates, or that perverted thyroidism may be the instigator of the association.

The administration of thyroid preparations may induce a functional or systemic anomaly analogous to that prevailing in hyperthyroidism; alimentary glycosuria *e saccharo* in Graves' disease may thus be dependent on the same causative factors as when it supervenes on the ingestion of thyroid substance. Like in morbus gravesii, alimentary glycosuria *e saccharo* is induced in a certain proportion only of the cases under thyroid medication. There are instances on record in which glycosuria did not ensue even after the ingestion of very large doses of the preparations of thyroid.

Alimentary glycosuria after thyroid medication, however, may not only occur in those with latent diabetes, but also in more or less normal individuals. Bettmann[29] had given thyroidin or iodothyrin for a week to 25 healthy persons. The quantity was moderate and with the last dose he administered 100 grams glucose. He induced glycosuria in 12 individuals, that is, in 48 per cent. of those who were subjected to the test. Concurring with glycosuria he found an increase in the amount of urine. In all instances the glycosuria had subsided in a week's time.

Strauss (loc. cit.) observed two cases of diabetes in which the tolerance for carbohydrates became diminished after the use of thyroid preparations, and Grawitz (loc. cit.) found in his case of Graves' disease complicated with diabetes, that the glycosuria became more intense for two weeks, even after the medication—iodothyrin—had been discontinued, which fact points to a cumulative or long-continued action of the agent.

It would lead me too far were I now to relate all pertaining instances recorded in literature during the last five or six years; the evident interrelation of thyroid medication and sugar excretion in certain cases, and its analogy to alimentary glycosuria in Graves' disease, evinces that the eventual association of the two latter conditions is not one of accident, but one of necessity.

I shall refrain from detailing the various contentions as to the common etiology of morbus gravesii and diabetes mellitus. Suffice it to state, that both affections were classified among the neuroses without definite anatomical substrata; that they were considered sequelæ of some affection of the sympathetic nervous system, or that both were dependent on lesions in the medulla oblongata, or finally, that Graves' disease as well as the diabetic phenomena resulted from a perverted action of the thyroid gland.

In delineating the connecting points between hyperthyroidism and diabetes mellitus, but two eventualities should be taken into account, namely, the synchronous production of both conditions and that association in which diabetes is attendant on completely developed Graves' disease. The complication in which exophthalmic goiter appears subsequent to diabetes mellitus seems

to be devoid of any interdependence. In the first instance, all pertaining cases which I found recorded should not unreservedly be accepted as belonging in a class by themselves. In the one case of Hartmann, goiter without the other symptoms of Graves' disease existed 13 years before diabetes supervened. It is true, the clinical picture of hyperthyroidism was completed only a year afterward; however, it is quite possible that the goiter was symptomatic of incipient or latent morbus gravesii. Just the reverse occurred in Schmidt's case, in which the goiter did not appear at all. In the instance related by Grube it is not at all impossible that the exophthalmic goiter pre-existed in a latent form. Furthermore, the production of Graves' disease during a chronic disturbance like diabetes might occur just as any other concomitant affection may arise, i. e., independently of the first existing disturbance.

The loose connection of Graves' disease with antedating diabetes manifests itself by the unchanged character of the latter after supervention of the former. The three last-named observers do not speak of any aggravation of the diabetic phenomena; there was, apparently, no change for the worse after the association of the two conditions.

Those instances, however, in which both conditions arise contemporaneously, or in which diabetes is preceded by fully-developed morbus gravesii, are in almost every case very grave disturbances from the onset, or the entrance of diabetes is indicative of an aggravation of the symptoms of Graves' disease. While in the last two eventualities the association, manifestly, is one with a common etiologic basis, the combination in which diabetes is the original and morbus gravesii the subsequent affection, ensues without their apparent interrelation.

There seems to be little doubt that Graves' disease is due to the perverted action of the thyroid, or the parathyroids, or of both. If the same abnormal thyroid or parathyroid activity stands also at the foundation of the concurring diabetes, then we must assume with Bettmann (loc. cit.) that the thyroid intoxication exerts a secondary influence on the most potent organs of metabolism. However, if such is the case, why is the association of both affections so infrequent? If superactivity of the glands is the supposed cause of the association, then the complicating diabetes is virtually what I have designated a diabetic deterioration,[30] that is, the glucose and the increased nitrogen output are due to augmented disintegration of body albumin. Yet, why should the association be so infrequent when superactivity of the glands seems to be the causative factor of Graves' disease? The diabetic phenomena can not be due to diminished thyroid or parathyroid activity, because, firstly, the condition underlying Graves' disease is mostly likely one of increased glandular activity, and, secondly, extirpation even of the thyroid gland is not followed by diabetes, as Minkowski[31] has pointed out. The glycosuria observed by Falkenberg[32] after removal of the thyroid body, contrary to his own contention, was nondiabetic, and was presumably caused by interference with the systemic equilibrium, and not by the loss of thyroid activity, *per se*. Besides, as far as I am aware, these observations remain as yet uncorroborated.

Thus it appears that hyper- as well as hypo-activity of the glands are, as such, without influence on the sugar excretion. The association of hyper- or dys-thyroidism with diabetes is explainable only by the perverted action of a fermentative substance usually generated in minute quantities by the thyroid or the parathyroids. Pathologic action of the glands need not necessarily comprise perverted activity of the special ferment. In other words, there may be perverted, or toxic thyroidism, or parathyroidism, as in mobus gravesii, and no disturbance or alteration of the specific fermentative activity. Hence, the relative frequency of Graves' disease and the extreme rareness of its association with a synchronously arising or an attendant diabetes.

We have thus far not succeeded in isolating any physiologically active thyroid or parathyroid ferment; the specific hypothetic ferment substance in question exerts probably a plasmolytic function. In normal amount and activity it may be essential to physiologic catabolism; occurring in excessive quantities, or exhibiting augmented potency it may be productive of diabetic deterioration. As the thyroid and the parathyroids do not seem to play an immediate rôle in the metabolism of carbohydrates, it is not very likely that the ferment in question is endowed with glycolytic properties. If it were we would have to assume the occurrence of a specific afermentemia or dysfermentemia which would give rise to hyperglycemia and all the phenomena denoting a diabetic state.

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DISCUSSION.

DR. A. A. JONES, Buffalo—I have observed a case recently which bears on the discussion. For a number of years an

obese man of middle age was in my care and he always presented the ordinary symptoms complex of lithemia, with hyperacidity of the urine, of high specific gravity, with a large sediment of uric acid. His pulse was of low pressure, small and weak. Except for pain in his back at times and a feeling of weariness, he appeared to be in good health otherwise. On account of his obesity I gave him extract of thyroid in ten-grain doses a day. Before administering the thyroid extract his urine was repeatedly examined for sugar and none found. Since giving the extract the urine was found to be loaded with sugar except when he was on an absolute diet; the slightest departure from the absolute diet caused sugar in the urine, sometimes amounting to as much as from thirty-six to forty-seven grams in the twenty-four hours. When the thyroid extract was stopped the sugar disappeared from his urine. I do not offer this as an argument that glycosuria in exophthalmic goiter is due to any enlargement of the thyroid gland.

DR. STERN, in closing—Starr has made observations on this matter and came to the conclusion that thyroid medication does not produce glycosuria unless there is some predisposition. As to the coincidence of diabetes and Graves' disease, I concur with that, if diabetes occur at first and Graves' disease afterward; if they occur simultaneously then it is different altogether. Regarding the frequency, there are only twenty-four cases on record, two having occurred under my own observation. I have hunted through the literature of all languages and those were all that could be found.

ENDOCARDITIS AS A COMPLICATION OF PNEUMONIA.*

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Ever since the days of the second edition of Bouillaud's clinical treatise on diseases of the heart, pneumonia has been recognized as one of the causes of endocarditis. Endocarditis in pneumonia, however, is of infrequent occurrence, as may be inferred from the following statistics:

Thus Aufrecht, in 1,501 cases of pneumonia, observed recent endocarditis only once. Fismer encountered it in 2 of 180 cases; Herman once in 44 cases; Huss 4 times in 2,710 cases; Waller once in 81 cases. It was recognized twice in 498 cases which I analyzed ten years ago, and I have since seen a few other examples. Pye-Smith met with (ulcerative) endocarditis 7 times in 425 cases of pneumonia. Sears and Larrabee found, at autopsy, 9 cases of endocarditis in 341 fatal cases in an analysis of 949 cases of pneumonia. Osler found endocarditis in 16 of 100 fatal cases of pneumonia which he analyzed.

Cases without reference to statistics have been reported by many writers. It follows from the statistics above quoted that endocarditis was known to be present in 19 of 6,050 cases of pneumonia, equal to 0.3 per cent., and in 47 of 1,213 fatal cases, equal to 4 per cent. However, I am of the opinion that this is an underestimate of the truth for very obvious reasons. On the other hand, if we analyze the cases of acute endocarditis we find that pneumonia figures quite largely as a causative agent:

Thus, pneumonia appeared to stand in an etiologic relation to the endocarditis in 1 of Abraham's 9 cases; in 8 of Banti's 22 cases; in 1 of Bullock's 13 cases; in 14 of Desse's 34 cases; in 9 of Harbitz's 43 cases; in 1 of Truax's 6 cases; in 14 of Kanthack and Tickell's 84 cases; in 5 of Lenhartz's 38 cases; in 54 of Osler's 209 ulcerative cases; in 1 of Jackson's 5 cases; in 1 of Walter's 21 cases, and in 6 of Weichselbaum's 33 cases.

Thus, of these 517 fatal cases 115 were in connection with pneumonia, a percentage of 22.3.

* Read at the Fifty-third Annual Meeting of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. Frank A. Jones, George Dock and J. M. Anders.

The endocarditis of pneumonia is usually on the left side, rarely on the right. This statement, which is based on a survey of a large number of reported cases, is important because it has been stated by eminent authorities that pneumococcal endocarditis attacks by preference the right side of the heart, and the error has found currency in the literature.

The mitral valve is oftenest affected, but the aortic is probably more frequently involved than in any other form of endocarditis. For example, in 40 fatal cases which I have analyzed as to this point the mitral was alone involved in 14; the aortic alone in 10; the mitral and aortic in 7; the aortic and tricuspid in 2; the tricuspid alone in 2; the pulmonary alone in 2; the left valves in 1; indefinite in 2.

The action may rarely extend from the valvular cusps to the ventricular or auricular walls, the chordæ tendinæ, etc. Thus Andrew reports a case in which there were ulcerative vegetative growths on the aortic and mitral valves and all over the interior of the left ventricle.

Of the distinguishing features of pneumococcal endocarditis may be mentioned the massive character and broad base of the vegetations and their tendency to ulcerate. Thus, in McWeeney's case, there was a mass of vegetations the size of a cherry on the right aortic cusp, behind which the leaflet was ulcerated and perforated. In Osler's 16 cases of endocarditis, encountered in 100 fatal cases of pneumonia, 5 were verrucous and 11 ulcerative. Pye-Smith met with 7 cases of ulcerative endocarditis in 425 cases of pneumonia.

Pneumococci, first found in the lesions of endocarditis in pneumonia by Meyer in 1887, may usually be found if carefully looked for. Early they may be living and active, but they soon lose their vitality and die. Under these circumstances the softened débris from such endocardial vegetations are sterile.

Endocarditis in pneumonia develops comparatively early. Thus, in James and Porrith's case, with death on the seventh day, ulcerative endocarditis was present. In Bachfeld's case, with death on the ninth day, there was already an ulcerative endocarditis of the mitral valve.

The symptomatology of pneumonic endocarditis, previous to ulceration and embolic showerings, is enveloped in considerable obscurity. That the valves may be loaded down with large vegetative masses without giving rise to any distinguishing symptoms and signs seems scarcely credible, yet the fact remains that this is of frequent, if not of usual, occurrence. Not only is this true of the verrucose variety, but it applies to many cases in which ulceration has taken place.

Thus, in Pollock's case, with vegetations and a mass of coagulated fibrin on the ventricular surface of the anterior cusp of the aortic valve, an inch in length and five-eighths of an inch in breadth, with an ulcer with thickened edges on the other leaflet, the aortic sounds remain normal. In a case reported by such an expert as Gibson an acute ulcerative endocarditis of the aortic valves ran its course unrecognized during life. Again, such an experienced and acute observer as Sturges reports a case in which the cardiac sounds were carefully observed during three weeks; nevertheless, the autopsy disclosed large vegetations on the perforative ulcerations of the aortic leaflets. One cusp was divided by the ulcerative process as far as its base, while from the second a mass of old fibrinous clot, about an inch in length, depended by a thin pedicle. This cusp also had a small perforation near its center. On the remaining cusp was a vegetation the size of a pea. The reporter specifically remarks that, "it may be stated positively, therefore, that the cardiac sounds were clear and without murmur." In the case which I was about to report the heart sounds, examined many times by Babcock and more than once daily by myself, re-

mained clear and distinct until after the embolic showering, which occurred at the end of a month.

If symptoms and signs should be present and detected at a period anterior to the occurrence of embolism they will be those which are common to all forms of endocarditis. Of these a change in the character of the pulse, especially as estimated by the sphygmograph, an alteration in the quality of the heart's sounds and the appearance of cardiac murmurs are the most important. Should ulceration occur these phenomena are more likely to appear, or if present, they are accentuated, and others are added, the most striking and significant of which is embolism.

Ulceration occurs in a large proportion of cases of pneumonic endocarditis. It may occur early, or it may be delayed for many days, or even several weeks. A not uncommon sequence of events is for the pneumonia to run its course to crisis, with nothing unusual to direct attention to the heart, when, after a few days of apparent convalescence, signs of embolism with fever supervene. Or disintegration of the endocardial vegetations may occur, with evidences of general septicemia, before the pneumonic process has run its course, with practically certain death in a few days. Or, again, the period of apparent convalescence may be greatly prolonged, as occurred in my own case, with at least some prospect of recovery.

Some of the notable symptoms of ulcerative endocarditis are: cardiac irregularity and fluttering with murmur; gastrointestinal disturbances with possibly blood in stools; hematuria; pain in the region of the spleen, in the kidneys, in the parotids and about the joints; disturbances of visions; fever; emaciation; cutaneous petechiæ, etc.

Purulent meningitis is a very frequent concomitant with pneumonic endocarditis. Thus, in 54 fatal cases of pneumonic ulcerative endocarditis, Osler found meningitis in 15. They coexisted in 3 of the 7 cases analyzed by Sears and Larrabee.

The duration in fatal cases is usually a few days or weeks, but in those cases which end in recovery the course is, necessarily, a prolonged one.

A fatal termination is the result in an overwhelming majority of cases, yet the occurrence of such cases as the one reported in this paper and of a very few others, rare as they may be, shows that the condition is one which is not necessarily fatal.

It is my opinion that those cases in which softening and ulceration does not take place for a considerable time after the vegetations have formed offer some, although small, hopes for recovery. Under these circumstances the ulcerative débris is usually not infective and if the emboli are minute the showerings may be nonlethal.

In the matter of treatment I wish to emphasize the importance of those measures which have for their object the lessening and prevention of sudden and severe cardiovalvular strain. In my opinion the patient should, when during or subsequent to an attack of pneumonia, a diagnosis of endocarditis can be positively or probably made, be confined, absolutely, to the recumbent position and all voluntary, and especially straining, movements avoided. He should not be allowed to turn in bed by his own exertions, much less be allowed to assume the erect position, and these precautions should be continued for several weeks, e. g., six or more weeks after the last embolic manifestations. Coughing, sneezing, etc., should be avoided. The other advisable features of treatment should follow ordinary lines.

The following case of pneumonic endocarditis, with ulceration and recovery, is given in rather free detail for the reason that in it the symptomatology and diagnosis were clear-cut and positive and the result eminently satisfactory. In all of its important features I have thus far been unable to find its counterpart in the literature on this subject.

Summary.—Pneumonia, with hepatization gradually extending and involving almost the whole of the lungs; profound symptomology and prolonged course; ulcerative endocarditis and very extensive embolic showerings; recovery with but little apparent injury of the heart.

Narration.—A gentleman, 68 years of age, of previous general good health, was taken, at 11 a. m., May 6, 1900, with a slight chill, followed by headache, general aching pains, fever, cough, slight pain in the right side of the chest and other of the ordinary symptoms of beginning pneumonia. When first seen at 2 o'clock there was no difficulty in arriving at a diagnosis, although auscultatory signs could not be detected.

The symptoms were of moderate degree of severity during the first 24 hours, after which they rapidly increased in intensity until the end of the third day, when they could be fairly described as very severe. After this they more gradually but relentlessly increased until the sixth and seventh days when they had attained an appalling gravity. On the eighth day a pseudo crisis occurred, but symptomatically this was limited to the temperature, which declined to normal, the other symptoms continuing unabated and the temperature subsequently rising. On the ninth day prostration was so profound that for a time death seemed imminent. Later the general symptoms underwent slight improvement, but with further extension of the pneumonic process, until the fourteenth day, with termination by lysis during the following four days.

The highest daily temperature during the first two days was under 102.5; from the third to sixth days it reached 104.2; on the seventh 101.6; on the eighth 99.3; from the ninth to the fourteenth 99.8 to 100.3; from the fifteenth to eighteenth 99 to 99.4; afterwards normal. The cough was, for the most part, of moderate severity, although on many days it was slight and on a few severe. Expectoration was less free than usual; characteristic, and, after the first two days, contained pneumococci. Thoracic pain followed the advancing pulmonary involvement although not severe. The weaker and some of the stronger reflexes were in abeyance, as marked by absence of yawning and sneezing, retention of urine, incontinence of the bowels, etc., until the eleventh day, after which they gradually resumed their functions. On and after the fifth day the patient became restless, delirious, listless and more or less profoundly unconscious. After his recovery he had no recollection of any phase of his illness which occurred beyond the first day. Throughout, the skin was moist, and during the first six days perspiration was very free. Labial herpes first appeared on the fourteenth day. Hematogenous jaundice appeared on the ninth day and was noticeable for several days. On the fourth and fifth days thirst was great. A fair amount of nourishment was taken; nausea and vomiting occurred only twice. During the first week the bowels were loose, the movements offensive and flatus extraordinarily abundant. The urine was, during the first week, normal in quantity for the patient, but during the second week the excretion was about doubled. Hyaline and especially granular casts appeared on the third day, the latter soon becoming extremely numerous and marvelously uniform in size and appearance. On the fourth day there was present 2 per cent. of albumin; on the fifth day 5 per cent.; on the sixth day 3.5 per cent.; with a gradual decline until the thirteenth day, when it disappeared. On the seventh to ninth days hemoglobin was notably present. The choroids were present, to 14 per cent. on the second day; 0.75 on the fourth day; 10 per cent. on the fifth day; 2 per cent to 3.5 per cent. from the ninth to eighteenth days.

On the third day the blood showed 5,500,000 erythrocytes and 7,400 leucocytes, and of the latter 92 per cent. were polynuclears and 0.2 per cent. eosinophiles. On the fifth day there

were 7,320,000 erythrocytes and 9,533 leucocytes, with absence of eosinophiles. On the eighth day the erythrocytes had fallen to 3,720,000; the leucocytes had risen to 22,200, and the serum was highly colored with hemoglobin. On the tenth day, with 12,000 leucocytes the polynuclears had fallen to 83½ per cent. and the eosinophiles had reappeared and numbered nearly 2 per cent. After the eighteenth day, and with apparent convalescence, the erythrocytes remained at about 3,700,000, the leucocytes at 7,000 to 12,000, the polynuclears increased and the eosinophiles reduced.

The pulse was at first moderately, and later markedly reduced in tension, of moderate frequency and, after the sixth day, at times irregular. From the second to the ninth day its frequency ranged between 100 and 128, subsequently not rising above 94.

Cardiac murmurs, sought for many times daily, were not detected. The respiration rate ranged on the second and third days up to 38, on the fourth to ninth days up to 52, subsequently gradually declining to 22 on the eighteenth day.

On the second day the pneumonic lesion was definitely located in the middle lobe of the right lung, from whence it extended, by fits and starts, to every portion of both lungs except the apex and anterior portion of the upper lobe of the left lung, the last detected involvement of fresh tissue occurring on the thirteenth day. Resolution began and had made considerable progress in those parts of the lungs which were early hepatized before the latest invasions had begun, and pursued an ordinarily rapid course, so that by the 25th day air entered every portion of the lungs and râles could only be detected after coughing or very deep breathing, and only in a few circumscribed localities.

Aside from the exceptions mentioned and considering the severity of the case, convalescence pursued an ordinary course until the twenty-ninth day. On this day, while sitting up for the first time, in a reclining chair, the patient suddenly felt an unusual weakness come over him; he was placed in bed, whereon he fell asleep, awakening after an hour with pain in the right shoulder and side of the neck. During the following few hours similar pains, followed by soreness, tenderness and more or less swelling, was noticed in almost every part of the body, notably in and about the joints of the fingers and toes; the wrist and ankles; the shoulders; the elbows, knees and hips, etc.; in the parotid glands, spleen, kidneys, etc.

There was moderate photophobia with impairment of vision; the eyes were tender on pressure and moving them was painful. There was a slight but very noticeable hesitation in speech; the tongue was thick and its movements painful. There was slight impairment of auditory acuity and, after a few days, there developed a peculiar aberration of hearing, in which the patient noticed a lisping quality in ordinary voices. There was tenderness on pressure over the stomach and spleen, and the latter was demonstrably increased in size. The urine was moderately hemorrhagic. After a few hours it was noticed that the entire surface of the body was unequally but thickly covered with minute red spots, which later became purple in color.

Six hours after the onset of these symptoms a very slight direct aortic murmur was detected; on the following day the murmur was loud and distinct, continuing so for several weeks, and, in a lesser degree, permanently. Embolic showerings of more or less profuseness followed at irregular intervals, the last seven days after the first.

During the week of these embolic eruptions the temperature rose to 103, the pulse to 118 and the respirations to 28, with subsequent rapid subsidence of these symptoms. The leucocytes increased to 20,000, with an initial increase in polynuclears and a diminution of eosinophiles. It is, however, interesting to notice that after a few days, with a leucocyte count ranging from 10,000 to 15,000, the polynuclears decreased to 68 per cent., the lymphocytes increased to 25 per cent. and the eosinophiles increased to 3 per cent. Numerous blood cultures proved sterile and no bacteria were detected in the stained specimens.

The subsequent history of the case may be summarized as follows: The parotid swelling and the auditory and ocular phenomena gradually disappeared within three weeks. The pain in the larger joints and muscles abated in about a month. The pain and swelling of some of the tendinous sheaths and smaller joints continued for a very long time and in the fingers is yet present. The profound prostration passed away in a few months. The blood was for several months deficient in erythrocytes and hemoglobin, resuming the normal in about six months. The urine continues to show occasionally a few hyalin casts, these having been absent before his illness. Palpitation and oppression on exertion gradually declined, but are yet present in a slight degree. Although there remains a direct aortic systolic murmur, and at times a faint diastolic as well, the pulse is, for the patient, of normal frequency, i. e., from 55 to 65, and is not more than ordinarily accelerated by moderate exercise. Aside from the occasionally present and slight aortic diastolic murmur there are no evidences of valvular insufficiency. The gentleman is now 70 years of age, in good health and shows but little of his age.

There would be failure in one of my principal objects in reporting this case were I to omit mention of some of the therapeutic measures which were adopted: During the pneumonic attack the patient was bled to 16 ounces on the second day; fluids were introduced into the system as freely as possible by the mouth, rectum and, on two occasions, by hypodermoclysis; diet and intestinal antiseptics were employed to correct the tendency to intestinal putrefaction; nucleinic acid was used whenever the leucocytes manifested a tendency to diminish in number; digitalis and suprarenal extract were given to increase cardiac power and contract the paretic capillaries; oxygen was employed freely throughout; hypodermic injections of camphor were used on two occasions when depression was most profound; antipneumococcic serum was given, in repeated doses early, at the end of the first week, and again on the thirteenth day; the environment and sick-room facilities were all that could be desired; the nursing was intelligent and assiduous; medical attention was, practically, constant.

After the ulcerative endocarditis manifested itself the patient was kept in bed for ten weeks, during six of which he was permitted to make no voluntary movements—not feeding himself, raising his head or turning in bed. After this he gradually resumed voluntary exercise, being allowed to go downstairs for the first time on the 135th day of his illness.

CONCLUSIONS.

1. Endocarditis is an infrequent occurrence in pneumonia, and ulcerative endocarditis is a rare event.

2. When endocarditis occurs it does so comparatively early in the pneumonic attack and ulceration may occur at any time within a period of probably several weeks, the time of embolic showering being possibly coincident with some unusual valvular strain.

3. The symptoms and signs, previous to ulceration, or in the cases in which this does not occur, are equivocal.

4. Any of the valves may be affected, but the preference is for the mitral, although the aortic is oftener attacked than in any other form of endocarditis. The vegetations are quickly formed and massive and they have a marked tendency to ulcerate. Pneumococci are present early, and should ulceration occur the blood becomes infected. Later the pneumococci die and embolic showerings are sterile.

5. In simple endocarditis the diagnosis is always difficult and often impossible. The murmurs and embolic showerings of ulcerative endocarditis render the diagnosis of this condition comparatively easy.

6. The prognosis of simple endocarditis is not well established, but that of the ulcerative form is extremely grave, although not absolutely hopeless.

7. The treatment of pneumococcal endocarditis, both simple and ulcerative, should embrace, as a cardinal and the most important principle, absolute rest in the recumbent posture, thus placing the least possible burden on the heart.

8. There is but little tendency toward cicatricial contraction, and when recovery ensues, even in cases with ulceration, the integrity of the valve may be unimpaired and health completely restored.

DISCUSSION.

DR. JAMES B. HERRICK, Chicago—I was particularly interested in that portion of Dr. Well's paper which dealt with the possibility of recovery in acute ulcerative endocarditis. Of course, we recognize that it is very difficult to draw any sharp dividing line between the simple form and the ulcerative. Yet, by the complex symptoms, chills, petechial spots, embolic phenomena, emaciation, bacteria in the blood, etc., we are justified in making a diagnosis of ulcerative endocarditis. That ulcerative endocarditis need not necessarily prove fatal may be argued on *a priori* grounds. Other cases of septicemia, e. g., streptococcic puerpural septicemia, may recover even though severe. Another argument that may be advanced for the possibility of recovery from this disease is the relating of such cases as reported by Dr. Wells. When one looks through the literature on this subject much surprise is expressed on finding how many cases have been reported. I have been particularly interested in the subject of late, and I have found some 30 or 40 cases of reported recovery from this form of the disease. While it is very easy to pick flaws in the histories of these cases and to say that they do not conclusively show that the disease was ulcerative endocarditis, yet each history has been carefully given by skilled observers whose judgment must be given some weight. Another line of argument is to be found in the study of autopsies on those cases dying from mechanical lesions induced by the valvular trouble. No more interesting work has been done than that of Harbitz. A few years ago, in a monograph on this subject, he divided endocarditis into two classes, toxic and infectious. This second class he again divided into two forms; (*a*) where the clinical manifestations were of the pyemic type, with chills, fever, sweat, etc., which run a fulminating course, terminating in death; in this class we find the staphylococci; (*b*) the clinical symptoms are less violent and at autopsy changes may be found which are ulcerative and, as a rule, the pneumococci or, more often, the streptococci, are to blame. In a certain number of cases, dying from the mechanical effects, there are found the same anatomic changes as are found in the second group of fatal cases, but the micro-organisms have lost their virulence. By inoculating experiments he found them degenerate and dead. He found scar tissue and calcification and other evidences at attempts at healing. So that, arguing along these three lines of *a priori* reasoning, clinical experience and postmortem observation, we may say that, in the small percentage of cases, particularly when the pneumococcus or streptococcus is the organism that produces the lesion, recovery is possible. If this is so it must modify the very unfavorable prognosis given in such cases and should encourage us in our efforts to cure. The prognosis need not be so grave as before. We should make more careful bacteriologic examinations of the blood and so determine the micro-organisms that are doing the damage.

DR. WELLS, in closing—I wish to say in a few words that which I consider to be very important concerning the endocarditis of rheumatism and of pneumonia. As is well known, rheumatic endocarditis attacks the tissues of the valves, producing thickening; contraction follows with consequent deformity of the valves. This contraction is progressive until its limits are attained, and many months are required before the full damage can be measured or estimated. I do not believe the same to be true in the endocarditis of pneumonia; there being but little tendency to subsequent cicatricial contraction of the tissues of the valve. If there should, perchance, be recovery from the initial lesion recovery with fair valvular action may ensue, unless the ulceration has been very extensive. Certainly in the endocarditis due to pneumonia the chances of recovery are infinitely less than in the endocarditis due to rheumatism, but if the patient recovers at all it is possible that recovery may be more complete. Another very important point which I wish to emphasize is that examinations of a very large number of postmortem reports show conclusively that it is difficult and often impossible to recognize the presence of even large valvular vegetations during life, no matter how carefully or skilfully they may be searched for. In the case reported Dr Babcock could detect no murmur previous to ulceration, and I am sure none was present during this time when the patient was under the closest observation. The only change noticed in the cardiac movement was a tendency for six days to slight irregularity of rhythm.

EXCISION OF THE GASSERIAN GANGLION.

WITH REPORTS OF TEN CASES OPERATED UPON BY THE HARTLEY-KRAUSE METHOD.

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AND
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(Concluded from page 901.)

Complications. Hemorrhage. The most serious and first complication encountered is hemorrhage. That from the external incision and bone, especially at the anterior angle, from the anterior branch of the middle meningeal artery, is profuse. William Perry had a case of meningeal hemorrhage from the flap and the patient died of meningitis on the fourth day. For this reason the bone is not divided in this position until the last act of the osteoplastic flap formation. If the artery is free on the surface, it may be ligated at this point, or if it be in a bony canal, as it was in 55 per cent. of the skulls examined by Dollinger,[11] it can be compressed by plugging the opening, or, better, by indenting the bone with a blunt punch.

A second source of hemorrhage is from the venæ Santorini, with the separation of the dura. The separation should be carried well into the anterior portion of the middle fossa, so that the second branch of the nerve is encountered at the foramen rotundum first. The dura should then be separated backwards until the third branch is reached, and for one-third to one-half an inch posterior to the foramen ovale. It is possible by this process to entirely avoid opening the middle meningeal artery or exposing the foramen spinosum, as Dollinger found in 59 per cent. of the skulls examined by him that the artery was situated at least this distance behind the foramen ovale.

The hemorrhage from these veins can be controlled by a few minutes' gentle packing, and time is saved by patience at this point. When the packing is removed the hemorrhage is slight and the operation may be proceeded with. The venous hemorrhage in one of Dollinger's cases was so great that he had to abandon the operation, and in some of Keen's cases it was profuse.

The third and most serious source of hemorrhage is from the middle meningeal artery at its point of exit from the foramen spinosum. In some of the cases of hemorrhage recorded the location is not definitely stated, but simply that it was severe and uncontrollable. Keen's experience was most trying, as in four out of eleven cases he had to abandon the operation temporarily in order to control the hemorrhage. In three of these cases it was of venous origin and in one from the middle meningeal at the foramen spinosum. In a fourth he controlled the hemorrhage by tamponing, but the patient died of coma and hemiplegia. In two other cases he had bleeding from the torn middle meningeal at the base, but did not have to postpone the operation. In one of Koenig's cases the hemorrhage was fatal. Czerny had two severe hemorrhages in three cases; one required plugging of the foramen spinosum and the other was controlled by the cautery on the twelfth day. Finny

11. Cent. für Chir., 1900, p. 1089.

used the tampon, but the patient died in seven hours. Schlange postponed operation for three days in one of two cases on account of hemorrhage. Willy Meyer reports severe meningeal hemorrhage.

The cases of hemorrhage have been so numerous and severe that special attention should be given to its control. For venous hemorrhage the tampon is all-sufficient, whether the hemorrhage be from venæ Santorini or the sinuses, as the blood pressure in both is very low. The bleeding from the middle meningeal artery can not and should not be controlled by tampon except where the tampon is inserted into the foramen and allowed to remain. When the artery runs in a canal in the bone, the canal wall can readily be compressed with a punch. A large tampon, as a means of controlling hemorrhage from the middle meningeal artery, only serves to cover the source of the hemorrhage. The ligation of the external carotid is the legitimate and rational means of control. If we do not adopt the suggestion of Friedrich, to place this ligature in position without tying, as an ante-operative procedure; its application should be imperative when the hemorrhage is encountered. From our experience we should agree with Dollinger that ante-operative ligation is not necessary. The fourth source of hemorrhage is from the cavernous sinus. This occurs in the final preparation of the ganglion for evulsion. It is often very profuse and fills the field of operation. By carefully adjusting the retractors or by means of the index finger of the left hand it can be controlled while the operation is being completed. The tampon is ample for its permanent control, and even this is not usually necessary, as on the removal of the retractors the dura falls back against the bony surface and the hemorrhage ceases.

Injury to the cerebral tissue occurs through lacerations of the dura in the process of making the bone resection. These lacerations should be immediately closed with fine catgut sutures, as otherwise, in the subsequent compressions of the brain, the cerebral tissue may be forced through the rent in the dura. The brain admits of considerable displacement without injury, provided this is produced by broad elastic retractors. It is our belief that the greatest trauma to the brain has been produced by the tampons during and after the operation. The lower the bone incision the less likelihood of trauma of the brain. In the Hartley-Krause operation, as originally described, the opening in the bone extends at least three-quarters of an inch too high. The brain trauma should be very materially lessened in the Cushing operation. All the tampons should be removed within the first forty-eight hours.

Sepsis. Of the cases reported as dying from sepsis, the principal cause was exposure of the drainage tract after the operation, as in Case 4 of our series, and one reported by Halstead. A septic meningitis immediately followed the operation in a number of cases. The amount of manipulation, sponging and instrumentation in this operation is great, and it is surprising that the cases of sepsis are not more numerous. The danger of infection from the drainage tract can be lessened by making this opening in the most dependent portion of the posterior angle of the incision. We believe that an unnecessarily large number of cases have been drained. It is important to preserve the bone in the Hartley-Krause operation, as otherwise a large depressed area is left which subsequently disfigures the patient. In several cases the bone became infected and necrotic, but the necrosis was a sequence and not a cause of the infection. The Cushing operation affords decided advantages in drainage, as the opening is on a lower level and the drain can be carried back close to the ear. Care should be taken in this operation that the temporo-maxillary articulation is not injured. A. E. Halstead reports one case of ankylosis of the jaw following it, but does not state whether the articulation was opened or whether the ankylosis was a sequence of fibrous contraction about the joint.

Recurrence of the pain after the removal of the ganglion is so rare that a few of the cases in which it did recur will be given somewhat in detail.

Friedrich's case.[12] Woman, aged 64 years. During operation had to tampon twice on account of severe hemorrhage. Ganglion and branches were removed completely. Operation on left side. Fifteen minutes after awakening patient complained of pain in the left lower jaw. Next day, after operation, had pain in the right temporo-maxillary joint. Two days later she dropped some of her words and showed slight mental disturbance. Pain later extended from the right side, where it was constantly present, across median line of nose to left side of nasal bridge. Four months later she had a very severe pain in the entire area of distribution of the left trigeminus, not spasmodic, but boring. Several peripheral operations were performed later in this case, with the result that finally some relief was obtained. Friedrich thinks that in this case he could eliminate hysteria. He is of the opinion that the peripheral nerves were regenerated, as he is positive he removed all of the ganglion.

Garre's Case.[13] Twisted the ganglion out with forceps, only a small portion of the first division remaining. After operation sensibility was preserved in the area of distribution of the first and second divisions, but the patient was absolutely free from pain. In area supplied by third division sensibility was lowered only. There was complete loss of sensibility where peripheral operations had been done and around flap. One year after operation patient was free from pain. Soon after this, however, began to have lightning pains on operated side, from ear to zygoma. He thinks the pain was due to regeneration of nerves from ganglion. At the time of a second operation, fifteen months later, no trace of the ganglion could be found, but he did find a "string," extending from dura into both foramina. He divided this and plugged the foramina with bone. Patient was free from pain for fifteen months, then it again recurred. Operated again; pulled nerve out of infraorbital canal. No pain for three months, when it again recurred. Numerous peripheral operations followed, until finally patient was permanently free from pain. In this case it is evident the ganglion was not completely removed at the time of the first operation.

Rose has two recurrences, which were attributed to the fact that the ganglion had not been completely removed.

Keen's first two cases recurred, because he broke up the ganglion in removing it. He admits incomplete work.

Krause says there is no regeneration when the peripheral branches are divided, and Horsley takes the same stand. Both admit that this statement is not absolute.

Carson[14] states that in the cases collected by Tiffany and himself, up to March, 1899, there were 208 cases of removal of the Gasserian ganglion, with 21 failures. In many of the cases of "recurrence" the pain was very slight, but these cases were included among the failures.

12. Deut. Zeit. für Chir., 1899. Bd. 52, Hft. 3 und 4.
13. Verhandl. d. Deut. Gesell. f. Chir., 1899.
14. St. Louis Med. Review, March 18 and 25, 1899.

This makes the percentage of recurrence about 10. Of the 21 cases, Carson states that the ganglion was entirely removed in 6, and of these the return of the pain in 3 was so slight as to be hardly worthy of consideration. In two of the cases the pain recurred on the opposite side of the face.

There were no recurrences in any of our operations. The patients mention the unpleasantness caused by the absence of sensation on the side of the face. A few of them say that a sensation of traction or drawing of the corner of the mouth and nose is noticed, and occasionally they have complained of an accumulation of food between the cheek and teeth—due to the anesthesia of the mucous membrane and the paralysis of the muscles of mastication on that side.

Mortality. Carson's statistics: 100 cases, ages from 36 to 73 years, 11 per cent. Tiffany:[15] 108 cases, 24 deaths (22.2 per cent.) due to: shock, 8; sepsis, 8; brain trauma, 2; brain abscess (from trauma), 1; brain trauma and edema of lungs, 1; sixth day after operation, 1; debility on fourth day, 1; apoplexy on tenth day, 1; cause unknown (death on fourth day), 1.

The mortality in the last 142 cases (which includes, in addition to Carson's 100 cases, 42 collected from the literature by ourselves), shows a reduction from 22.2 per cent. in Tiffany's cases to 15 per cent. in ours. The operation must always be considered as a grave procedure, and justified only after the less serious procedures have failed to relieve. In the young, however, it is our conviction that the ganglion will have to be removed, and it should therefore be the primary operation of election in these cases.

In the 42 cases collected by us there had been 66 operations on the nerve branches beside extractions of teeth (in many of them the matter of previous operations was not mentioned) showing an average of one and one-half peripheral operations for each individual from whom the ganglion had subsequently to be removed.

INDICATIONS FOR THE OPERATION.

1. Where all internal medication and the removal of external irritants have failed.
2. Where all branches of the nerve are involved in the pain. Here it should be a primary operation.
3. Where individual branches only are involved and relief has not been secured after the peripheral operation.
4. In cases where formerly divisions at the base were indicated.

REPORT OF CASES.

CASE 1.—Mrs. K. M., Lincoln, Neb., housewife, aged 53, was admitted to Mercy Hospital, Dec. 17, 1895.

Family History.—Mother, 85 years old, living and healthy; father deceased, the result of an accident; two sisters living and enjoying good health; husband and one boy well.

Personal History.—Patient enjoyed excellent health until sixteen years ago, when she was attacked with the present trouble. Was married at the age of twenty. Had one child; no miscarriages nor abortions. Never suffered from gout, rheumatism, nor any kind of disease. Had sustained no injury to the head. Had not suffered from severe emotional excitement, nor mental over-taxation previous to present illness. Menstruation normal.

Present History.—Sixteen years ago, after a hard day's work, patient was attacked with a "stroke" or "shock," which prostrated her to the floor. The shock consisted of a severe sharp pain in the entire right side of the face which lasted about ten minutes. She could not open her jaws, and remained for a time as though completely paralyzed. This was the onset of the attacks of chronic neuralgia for which she sought relief. The attacks occurred every few hours in the beginning, but for the last six years a spasmodic contraction of the muscles of the right side of the face, with closure of the right eye, accompanied by intense pain, occurs every fifteen or twenty minutes, day and night. Excitement, pressure on the face, or slight draught will bring on an attack. In the interval, the face is painful. The right half of the tongue appears to be the most painful spot and for that reason conversation is carried on in a low muttering tone, and has to be interrupted frequently when the attacks come on.

Examination.—No deformities or irregularities in the head or face; sight normal; nose free from obstruction. Teeth on the right side had all been extracted with the hope of relieving the neuralgia. No defect in the mouth or fauces; external meatus and drum normal. Heart and lungs normal; no irregularity in abdominal organs; pelvic organs normal; urine normal; no enlargement of glands; epitrochlear glands normal. The area of pain extends from right superciliary ridge down the entire right side of the face to the lower margin of mandible, from the anterior border of the ear forward to the middle line of the forehead, nose, lips, and tongue. An electrode placed over any part of the face produced intense pain.

Fig. 1.—Line of complete anesthesia.

Operation.—The patient was operated on December 24. Chloroform was used. The head was placed in a somewhat elevated position and turned to the side. The details of the operation were as described above. The evening after the operation the patient was conscious and she said she was entirely relieved from pain, suffering only from the soreness at the position of the wound. Forty-eight hours after the operation the gauze packing was removed. A small quantity of serum, blood and detritus, but no cerebrospinal fluid, escaped. The patient expressed great relief after the gauze was extracted, as she said the pressure seemed to be taken out of her head. At no time did her temperature reach 100 degrees. Her improvement was very rapid. She was able to sit up in a week, and in two weeks left the hospital. The accompanying cut (Fig. 1) shows the line of anesthesia three weeks after the operation. A letter from the patient, dated Aug. 20, 1901, states that she has had no return of pain. The only inconvenience experienced is the absence of sensation on the right side of the face.

CASE 2.—John G., Ossian, Iowa, male, aged 52, German, merchant, married, was admitted to Mercy Hospital April 7, 1896. He has several children, all well. He received a bullet-wound in the army. He enjoyed excellent health up to seven years ago, when he began to have attacks of pain on the

15. Anns. of Surg., 1896, vol. xxiv, p. 575-619.

right side of the face. In the winter time he would have them every day, or, at least, every second day. In summer he might go for a week without an attack. Last winter they increased very much in severity and duration.

Examination.—He is of phlegmatic temperament; responds slowly to questions; appears to be suffering from some mental disturbance. Complains of pain in an area about the size of a dollar above the right superciliary ridge. During the attack the pain extends over the greater portion of the face. Eyes, nose, mouth, and ears normal; has some digestive disturbance; lungs and heart normal; urine negative.

Operation.—April 9. Incision the same as described above. In this case the dura was opened in making the osteo-plastic flap and a considerable quantity of cerebrospinal fluid escaped. The packing was withdrawn seventy-two hours after operation and this was followed by a discharge of cerebrospinal fluid, which was stopped by tying the provisional suture. The patient made a rapid recovery. The numbness of his face annoyed him considerably. There was no pain after the operation. The ganglion and root were removed in one mass; the root and branches separate and distinct. Convalescence was rapid; the patient was up and about the room in a week, and left the hospital three weeks after the operation. Careful examination of this patient Oct. 15, 1901, shows that his general health is excellent. He still has anesthesia of entire right side of face, but does not complain of any inconvenience on account of the paralysis of the masseter and buccinator muscles. He has had no ophthalmia and has not suffered pain since the operation. There was no inconvenience expressed from the loss of sensibility to pain in the eye.

CASE 3.—Mrs. H. W. L., housewife, aged 40, American, was admitted to Mercy Hospital Sept. 16, 1898.

Present Illness.—For the past five years patient has suffered from severe pain in the left side of the face. This pain comes on irregularly in paroxysms, is associated with twitching of the facial muscles, and affects especially the area supplied by the two upper divisions. She has had all of the teeth in the upper jaw on the left side removed, but with no benefit.

Previous History.—Patient has been married ten years. Has had three children, but all died young. A number of years ago she had erysipelas and rheumatism. Family history, negative.

Operation.—September 21. Ether anesthesia. Hartley-Krause operation, the ganglion being considerably lacerated during its removal. The dura was punctured, and a considerable quantity of cerebrospinal fluid escaped. The hemorrhage, which was moderate in amount, was easily controlled by compression, the cavity sponged dry, and packed with a strip of iodoform gauze. The osteo-plastic flap was replaced and fixed in position by continuous suture, the gauze drain being allowed to come out at the lower anterior angle. Highest temperature recorded was on September 23, when it registered 101 degrees. Temperature reached normal October 4 and remained so. Up to October 4 she suffered considerable pain in back and head, and slept but little, often being delirious during the night. After that date the pain ceased, and she slept well every night. She was discharged from the hospital October 16, recovered.

In a letter received from the patient June 13, 1901, she says there has been no recurrence of pain or twitchings, she has no difficulty in masticating her food, and has had no trouble with eye. She also states that her health is better now than ever before; that she eats and sleeps well, and has gained flesh.

CASE 4.—Mr. J. M., Irish, aged 59, farmer, was admitted to Mercy Hospital, Nov. 2, 1898.

Present Illness.—Began about nine years ago with very severe pain in right supra- and infra-maxillary regions, occasionally extending into the right temporal region. The pain has continued since onset until the present time, is paroxysmal in character and is always brought on or aggravated by cold and exposure. Latterly, the attacks have increased in frequency and severity, so that the patient has scarcely any rest. Medical and dental treatment have been without effect.

Previous History.—Malaria six years ago; otherwise negative.

Family History.—One brother died of pulmonary tuberculosis; mother died of "carcinoma of the breast."

Operation.—November 5, ether anesthesia. Hartley-Krause operation. Hemorrhage was moderate in amount and easily controlled by compression. Cavity at site of ganglion packed with iodoform gauze, which was allowed to come out of the scalp incision at the anterior angle. Evening temperature 101 degrees in the axilla. For the next five days temperature ranged from normal to 100.2 degrees, and during this time he complained much of pain in the head. On the morning of the fifth day he was found with his dressings displaced, the opening exposed and the cerebrospinal fluid escaping on the surface without protection. The next day the temperature rose to 103 degrees and he became more restless and semi-comatose. On November 12 at 9 p. m. the temperature reached 106 degrees in the axilla, with pulse of 160, and he died the next morning from acute septic meningitis.

CASE 5.—Mr. W. A. G., American, aged 66, engineer, was admitted to Mercy Hospital April 13, 1899.

Present Illness.—Two and a half years ago patient began to notice a tingling sensation at the root of tongue on the right side. This developed into paroxysms of sharp, lancinating pain involving the whole right side of the face, at first at intervals of about an hour, and of late much more frequently. The intensity of the pain has steadily increased and at present is almost unbearable. The right side of the face is alone affected and the pain does not extend onto the scalp. The upper teeth on the affected side have all been extracted. He has been in the habit of taking, on an average, 12 grains of morphin daily, at times increasing the dose to 22 grains. He is in a very low, feeble condition physically, and has reached the stage of desperation, a very unfit case for operation.

Previous History.—Does not drink or smoke to excess. No history of syphilis. Typhoid and "coast" fever in 1875, while in Africa. Rheumatism and "sciatica" twenty years ago. In 1890, patient had an attack of right-sided hemiplegia, which lasted only fifteen minutes.

Family History.—One sister died of some brain disorder; otherwise the history is negative.

Operation.—April 15. Hartley-Krause operation performed under ether anesthesia. Considerable hemorrhage when the dura was separated from the base of the skull. Iodoform gauze drain inserted. Temperature 102.4 degrees the night of operation, and continued between 100 and 102 degrees until April 17. On the afternoon of the day of operation it was noted that the left side of the body was paralyzed. This continued, however, only three hours, when motion on that side became normal. Patient was restless and mildly delirious after the operation, and complained of severe pain in the head. On the evening of April 17 his temperature rose to 105.2 degrees in the rectum, with pulse 148, and respirations, 60. He died at nine o'clock. Autopsy not permitted.

CASE 6.—Mr. P. G., German, aged 67, laborer, was admitted to Alexian Brothers' Hospital, Sept. 20, 1899.

Present Illness.—Patient began to have pain in the jaw on the right side seven years ago. The pain was not continuous at first, but would come on in cold weather. He had several teeth extracted with no benefit. For the past two years pain has been present constantly, starting in the upper jaw and radiating upward over the right side of the face and head. The supra-orbital nerve was extremely sensitive to pressure, and the pain for the past few months has been intense and of a sharp, shooting character.

Operation.—October 5. Chloroform anesthesia. Hartley-Krause operation. There was very little hemorrhage during the operation, and none from middle meningeal artery. Area of operation was irrigated with normal salt solution after retractor was removed. The osteo-plastic flap was replaced and scalp incision closed with continuous silkworm-gut sutures. In the evening the temperature was 99 degrees; afternoon temperature next day was 100.6 degrees. After this, his condition was good, temperature at no time exceeding 101 degrees. Patient sat up in bed until the morning of October 20, when he

Case No.	Operator and Reference.	Date of Operation.	Duration of Disease. Years.	Sex, Age, Side.	Previous Operations.	Method Used.	Result. Immediate.	Result. Final.	Remarks.
1	Bartlett, Willard; Ans. Surg., June, '01, p. 683	10, 10, '00	17	F, 60, L	All teeth removed 15 yr. previous; infra-orbital evulsed, 1898.	Cushing. . . .	Recovery . . .	Paral. of 3d, 4th and 6th nerv's 4 wk.; recov.	Slight corneal ulcer, which soon healed, followed operation.
2	Bartlett, W.; Anns. of Surg., 6, '01, p. 683.	11, 27, '01	Many.	F, 50, R	All teeth removed	Cushing. . . .	" . . .	Eye palsies as in above; rec.	No corneal ulceration.
3	Beck, Carl (Chicago), personal communic'n.	Nov., '97.	4	M, 48, L	3d div. resected 2 yr. ago; 2d div. 1½ yr. ago.	H. K.	" . . .	Recovery . . .	
4	Ibid	May, '99 .	10	M, 42, L	14 previous operati'ns; all possible methods from neurectomy to removal of bone.	H. K., with removal of bone.	" . . .	" . . .	
5	Ibid	Oct., '99 .	½	M, 60, R	3 previous ops.; 1, remov'l of cyst of face; 2, neurectomy of 1st div.; 3, neurec. of 1st and 2d div	Ibid	Death 54 hours after operation.	. . . . .	Carcinoma of parotid; oper. undertaken to relieve pain without hope of radical cure.
6	Ibid	12, 10, '00	Several	M, 68, R	Neurectomy of 2d div.; neurectomy of 3d div.	Ibid	Recovery . .	Recovery . . .	
7	Coelho, S., Revue de Chir., Par. 5, 10, '99.	2, 28, '98 .	6	F, 40, R	Infra-orbital resec. in '94; inf. maxil. in '95.	Temporal method; H.K.	" . . .	" . . .	
8	Cushing, Harvey, Jour. Am. Med. As., 4, 28, '00	Aug., '99.	10	M, 63, R	Infra-orbital evulsed, '96; inferior dental in '97.	Cushing. . . .	" . . .	" . . .	Results learned by personal communication.
9	Ibid.	Dec., '99	12	M, 55, R	Infra-orbital evulsed in 1892.	" . . .	. . .	" . . .	
10	Ibid	Jan., '00.	2	M, 38. .	Infra-orbital and inferior dental evulsed in1899.	" . . .	" . . .	" . . .	
11	Ibid	Jan., '00.	7	F, 60, L	Infra-orbital evulsed in 1897 and 1899	" . .	" . . .	" . . .	
12	Erdman, J. F., N. Y. Med. Jour., 5, 6, '99.	8, 8, '98 .	4	M, 53, L	Supra-orbital, supra-trochlear and infra-orbital nerves excised in 1897.	Hartley-Krause.	" . . .	Recovery from pain.	Eye lost 7 wk. after operation from ulceration.
13	Halstead, A. E., personal communication.	11, 9, '00 .	6	M, 53, R	None	Cushing, mod. by Hartley.	" . . .	Recovery . . .	Ankylosis of jaw followed operation.
14	Ibid.	3, 3, '01 .	7	F, 57, L	Inf. maxillary divided 2 years before.	Ibid	" . . .	" . . .	
15	Ibid..	5, 12, '01 .	10	M, 50, L	None	Ibid	Death 5 days after operation.	Death. . . .	Developed suppurative meningitis; had chronic nephritis.
16	Krause, F., Muen. Med. Woch., 6, 25—7, 2-9, '01.	3, 24, '99 .	12	F, 41, R	Resections of 1st and 2d divisions in 1898.	H. K.	Recovery . . .	Rec.; pain in l. side later.	
17	Krause, F., ibid. . . .	8, 26, '99 .	10	M, 63, L	Resection of 2d division twice.	"	Failure. . . .	Failure. . . .	Pain was not confined to l. side before oper.; lesion evidently central.
18	" " "	11, 2, '99 .	. . . .	F, 59, R	2d and 3d divisions resected in 1896.	"	Recovery . . .	Recovery . . .	
19	" " "	1, 23, '00 .	8	F, 44, R	Lücke-Braun of '98; rem'd during next pregnancy.	"	" . . .	" . . .	
20	" " "	2, 23, '00 .	Several	F, 58, L	2d and 3d divs. operated upon many times.	"	Death 6 hr. after opera.; collapse.	. . . . .	Had chronic nephritis.
21	" " "	5, 7, '00 .	4	F, 30, L	4 previous operations; infra-orbital resected.	"	Recovery . . .	Recovery . . .	
22	" " "	6, 13, '00 .	17	M, 46, R	Infra-orbital resected '88; 2d division resected '92.	"	" . . .	" . . .	
23	" " "	8, 27, '00 .	7	F, 50, L	Infra-orbital, auriculo-temporal and inferior dental nerves resected.	"	" . . .	" . .	
24	" " "	8, 29, '00 .	15	F, 65, R	1st and 2d divs. resected in '98; no relief.	"	" . . .	Death in 21 da.; cardiac dis & pneumonia	
25	" " "	Mar., '01.	8	F, 60, R	2d division resected in '98; pain recurred.	"	" . . .	Death on 20th day; coma.	Grayish patch of softening at base due to pressure from retractor.
26	" " "	6, 6, '01 .	7	M, 64, L	Infra-orbital resected in '94; pain recurred	"	" . . .	Recovery . . .	Sclerotic middle meningeal torn.
27	" " "	6, 17, '01 .	25	M, 63, L	2d division resected in '93; 3d division in '95.	"	" . . .	" . . .	
28	Keen, W. W., Jour. Am. Med. Asso., 4, 28, '00.	2 opera's. 11, 9 9	⅓	M, 32, L	Infra-orbital removed November, 1899.	"	No improvement.	Pain continued.	Endothelioma involving Gasserian ganglion.
29	Levings, A.H., personal communication.	10, 24, '00	9	F, 41, R	Infra-orbital nerve removed '98.	"	Recovery . . .	Recovery . . .	
30	Mammen, E., personal communication.	11, 20, '94	2	M, 56. .	. . . . .	"	" . . .	" . . .	Entire ganglion not removed; second division bet. ganglion and foramen caught by forceps and evulsed; complete relief resulted.
31	Murphy, J. B.	11, 5, '98 .	9	M, 59, R	Dental operations only. .	"	Death; 11-13, '98	. . . . .	
32	" "	11, 25, '99	8	F, 43, R	. . . . .	"	Recovery . .	Recovery	
33	" "	10, 5, '99 .	7	M, 67, R	Dental operations only. .	"	Death; meningitis; 10, 22, '99.	. . . . .	
34	" "	10, 31, '99	4½	F, 51, R	. . . . .	"	Recovery .	Recovery . . .	
35	" "	4, 15, '99 .	2½	M, 66, R	Dental operations only. .	"	Death; 4, 17, '99.	. . . . .	
36	" "	5, 30, '00 .	4	M, 50, L	2d div. of 5th resected 8, '99; no pain for 8 mo.	"	Recovery . . .	Recovery . . .	
37	" "	6, 15, '01 .	½	M, 44, R	. . . . .	"	" . . .	" . . .	
38	Renton, J. C., Brit. Med. Jour., 11, 17, '00.	Nov. '98 .	7	M, 57, L	. . . . .	"	" . . .	" . . .	
39	Same as above	Aug. '99 .	5	F, 67, R	Inferior dental excised; pain returned in 3 mo.	"	" . . .	" . . .	
40	Spellisy, J. M., Anns. of Surg., 1900, vol. xxxi.	7, 19, '99 .	9	M, 55, R	Several teeth removed; also infra-orbit'l and inferior dental nerves in 1895 and 1896.	H. K.; preliminary ligation of ext. carotid.	" . . .	" . . .	
41	Thomas, J. Lynn, Brit. Med. Jour, 10, 28, '99.	2, 9, '99 .	3	M, 34, R	Teeth extracted	H. K	" . .	" . . .	
	Williams, N. T., Phila. Med. Jour., 8, 10, '01.	9, 2, '99 .	More than 8	F, 38, R	Nerves divided '93; teeth extracted, sup. maxil gang removed '94; inf. max. resected '96; intracranial resection of nerves 8, 30, '99.	"	" . . .	" . . .	Curetted out ganglion.

complained of severe headache, and rapidly lost consciousness. Afternoon temperature on this date was 104 degrees and on the next morning it was 104 degrees. He died at noon. The rapidity with which this patient lost consciousness would suggest apoplexy and with the sudden elevation of temperature indicate that the hemorrhage was basilar. Autopsy was not permitted.

CASE 7.—Mrs. W. B. W., housewife, aged 51, American, was admitted to the West Side Hospital Oct. 29, 1899.

Present Illness.—Four years ago patient was attacked suddenly with severe agonizing pain near right ala of nose, the pain shooting upward into the right temple and downward over the lip. Pain was constant for three weeks and since she has had repeated attacks at intervals of from one to three days. Longest interval of freedom from pain was three months. One year ago last July she fell and fractured the skull just above the left angle of the eye. While in bed after this injury she was free from neuralgia. During the past year the pain has been constantly present, eating, drinking, or almost any movement of the eyes being sufficient to bring on a paroxysm. Her appetite is poor, and her bowels constipated.

Previous History.—Had the diseases of childhood. Menstruation regular, but always preceded by some pain. Menopause at 37 years. No children or miscariages. Had la grippe five years ago. Family history negative.

Operation.—October 31, the Hartley-Krause operation. Hemorrhage moderate in amount and easily controlled by iodoform gauze packing, which was brought out through the lower posterior angle of the skin incision, and allowed to remain forty-eight hours. Time of operation 55 minutes. No hemorrhage followed removal of packing. The night of the operation temperature was 101.4 degrees and ranged between 99 and 101 degrees until November 4, after which it began to decline, reaching normal nine days later. Sutures were removed November 16 and the next day she sat up in a chair all day. She was discharged from the hospital November 19, recovered.

Examination.—Aug. 12, 1901. Has occasional momentary twitchings in right side of nose at intervals of several days. Also complains of burning or smarting sensation in region about right eye. These attacks come on at intervals of several hours or days. Also has a sensation of "pressure" in right side of face; weakness of muscles of mastication of right side, and occasional dribbling of saliva from right side of mouth. She also has the same smarting pain in left hip and left lower limb. This latter is at present her principal complaint. General health good. Temporal muscle is markedly atrophied, and there is anesthesia of area supplied by fifth nerve.

CASE 8.—Mrs. C., housewife, aged 43, American, was admitted to Mercy Hospital Nov. 23, 1899.

Present Illness.—Began eight years ago without any apparent cause with excruciating pain radiating along the right lower jaw. The attacks of pain were paroxysmal, lasting about one to one and a half minutes and recurring every four or five minutes. This condition would persist for from four to seven days, when she would have an interval of freedom from pain of perhaps several weeks. Each attack now lasts longer than in former years, and the pain is usually localized in the lower jaw, extending from there into the side of the head. The pain is sharp and lancinating, and now extends upward into the temporal region. It is accompanied by lachrymation on the affected side and a sensation of burning in the cheek. The most tender spot is at the symphysis. The slightest movement of the mouth or facial muscles is often sufficient to bring on an attack and at times she is obliged to remain in one position forty-eight hours or longer to avoid a paroxysm. Patient states that she is less likely to have the attacks if she keeps her bowels open.

Previous History.—Has had no children and no miscarriages. Pneumonia at nine years of age and malaria twenty years ago.

Family History.—One brother and one sister died of "consumption."

Operation.—November 25. Ether anesthesia. Hartley-Krause operation; no unusual complications occurred. Highest temperature recorded was 102.4 degrees on the fourth day. Temperature ranged between 99.4 and 102 degrees until December 3, when it reached normal and remained so. Patient was discharged from the hospital Dec. 22, 1899, recovered.

In a letter (March 19, 1900) patient states she has had no recurrence of pain, and is in perfect health.

CASE 9.—Mr. W. N., American, aged 50, superintendent in a factory, was admitted to Mercy Hospital May 29, 1900.

Present Illness.—Four years ago began having pain in left side of face just at left border of nose, below eye. This gradually increased in severity and was associated with twitching of the facial muscles. Nine months ago, second division of fifth nerve was resected at the infraorbital foramen. Complete relief followed operation and continued for eight months. Three weeks ago pain and twitching recurred and have persisted. The twitching is almost constant, but the pain is intermittent and of a sharp, shooting character. Sensation in area supplied by the second division is gradually returning. General health good.

Personal History.—Drinks very moderately. No venereal history. "Typhoid fever" twenty-one years ago. "Sciatica" on right side eight years ago.

Examination.—Heart, lungs and abdomen negative. There is a hyperesthesia in the area supplied by the second division.

Operation.—May 30. Ether anesthesia. Hartley-Krause operation. Venous hemorrhage during the removal of the ganglion slight and caused no trouble. Scalp incision was closed without drainage by means of interrupted silkworm-gut sutures. Temperature 100.4 degrees in the evening. Convalescence was uninterrupted, and the sutures were removed June 6. Wound had closed by primary union. Patient was discharged from the hospital June 23, at which time it was noted that the tongue deviated slightly to the left, when protruded, and the left corner of the mouth drooped a little.

Jan. 26, 1901. Patient has had absolutely no pain since the operation. The usual area of anesthesia is present, and there is paralysis of the muscles of mastication on the left side. He has had no eye trouble.

September, 1901: There has been no recurrence of pain since operation.

CASE 10.—Mr. F. S. (referred to us by Dr. Lowey), German, aged 44, laborer, was admitted to Mercy Hospital June 14, 1901.

Present Illness.—Patient states that six months ago he "took a bad cold" which settled in the right side of the face. The pain has been especially severe over the lower jaw. He is unable to speak without holding his face in his hands. Several weeks after the onset the pain disappeared, but recurred in a short time with increased severity. He has suffered intense and almost continuous pain for the last three weeks, so that he has with difficulty been restrained from suicide. General health is good.

Previous History.—Born in Germany; has been nine years in America; no previous illness.

Operation.—June 15. Ether anesthesia. Hartley-Krause operation. Moderate amount of venous hemorrhage during the removal of the ganglion which, however, was easily controlled by pressure of the gauze packing under end of retractor. Small gauze drain through lower angle of wound. Scalp incision closed with through-and-through sutures of silkworm gut. During the manipulations the dura was punctured and some cerebrospinal fluid escaped. The middle meningeal artery gave no trouble at any time.

June 16 temperature registered 100 degrees in the axilla. Patient restless and complained of severe pain in the head. Two days later the pain in right side of head was still present. Gauze packing was removed without causing any hemorrhage. Provisional sutures tied.

June 20, pain less. Patient had some epistaxis and was restless; June 24, some superficial suppuration at the site of the drain; temperature, 101 degrees.

After June 24 temperature dropped to normal and remained so, the suppuration subsiding rapidly.

Patient was discharged from the hospital July 24 absolutely free from pain and presenting the usual area of anesthesia in the parts supplied by the fifth nerve. The occipito-frontalis muscle on the right side is paralyzed. There is no paralysis of the external ocular muscles.

In November, 1901, Dr. Lowey reports that the patient has been absolutely free from pain or inconvenience of any kind since operation.

CASE 11.—Referred to Dr. A. H. Levings of Milwaukee, Wis., for operation. The following is Dr. Levings' report:

Personal History.—Mrs. S., aged 41. In 1890 she suffered the loss of two children, following which she was very much depressed and worn out. In 1891 was conscious of pain over and about the right eye, which gradually increased in severity. In 1896 the supraorbital nerve was evulsed for the relief of the pain which at this time had become very severe. The pain was relieved but very little and was now most severe beneath and around the eye, in the right temple, and in the top of the head. In 1898 the infraorbital nerve was exposed, its canal broken up, and the nerve seized as far back as possible and evulsed. This operation gave some relief for a short time and then the pain was perhaps more severe than before, coming on in terrific paroxysms, during which time the patient would be almost beside herself. The pain, as a rule, was confined to the branches of the first and second divisions of the fifth nerve. At times it would extend into the inframaxillary. The patient became somewhat addicted to the use of morphin, which drug seemed to her almost a necessity in consequence of the terrific suffering.

Operation.—Oct. 24, 1900, the Gasserian ganglion was removed. A curvi-linear incision was made from just in front of the ear upwards and forwards, terminating at about the external angular process of the frontal bone. The bone was sawed through and an effort made to turn it down with the flap of scalp. The bone crumbled and much of it was lost. The middle meningeal artery was broken across and the hemorrhage therefrom gave some little trouble. There was hemorrhage again from the same vessel at the foramen spinosum. There was considerable venous hemorrhage at the base when the brain was lifted.

The ophthalmic branch of the fifth nerve was first located and traced backwards and then the superamaxillary branch as it passed through the foramen rotundum was located, and last, the inframaxillary branch. These branches were finally divided near their exit through their various foramina and the ganglion removed. A few strands of catgut were placed in the wound for drainage. There was some slight infection in the scalp wound but none in the deeper tissues. The woman made an uninterrupted recovery.

At the present time, thirteen months after the operation, she is looking well, is in fair nutrition, complains some of a burning numb feeling in the right side of the tongue, and a stiff numb feeling in the right side of the face. The severe pain from which she formerly suffered has entirely disappeared.

Clinical Report.

FOREIGN BODY IN THE VITREOUS CHAMBER.

LEE WEBER, M.D.
DAVENPORT, IOWA.

The following case came under my observation Aug. 17, 1901:

A. B., aged 20, mechanic, while working on a piece of Bessemer steel—he holding a large chisel in both hands and stooping forward and a fellow workman striking with a sledge—was struck in the left eye by a piece of steel, which was thrown off by the cutting edge of the chisel, from the piece they were cutting.

He was seen about half an hour later and presented the following conditions: There was a small wound in the upper lid of the left eye, slightly inward from the center and about one-fourth of an inch from the lid margin.

On raising the lid a corresponding wound five millimeters long was seen at the sclero-corneal margin and a small wound in the iris near its base. Blood obscured the pupillary area and clouded the anterior chamber, but after dilating the pupil and waiting for the blood in the anterior chamber to settle to the bottom, vision was found to be equal to counting fingers at eight feet.

By ophthalmoscopic examination a long splinter of steel could be seen behind the lens extending downward and backward toward the point where it rested on the lower wall of the eyeball about one-half of an inch back of the lower sclero-corneal margin. There was some blood in the vitreous, so that the view was partly obscured, but the general outline of the foreign body could be made out and the lower end seen to be resting on the choroid at the lower part of the eye.

After the usual antiseptic precautions and the use of cocain (Dr. A. B. Hender assisted), the eye was rotated downward and it was found that the steel had passed through the upper lid, sclero-corneal margin, iris and edge of the lens and was entirely within the vitreous chamber.

It was thought best not to try to extract it at the point of entrance, as this would necessitate further wounding of the iris in order to reach the foreign body and dragging it through the iris might result in its becoming incarcerated in the sclero-corneal wound.

The eye was then rotated upward and an incision made one-half an inch back of the lower corneal edge at the point where the end of the steel was thought to rest. A pair of iris forceps was then passed through the wound and the steel seized at the first grasp and slowly drawn out. Slight hemorrhage followed, but was checked by the use of adrenalin chlorid. Atropin was used, the eye bandaged and the patient sent to bed.

The steel was found to be a splinter measuring three-fourths of an inch in length, one-eighth of an inch in width and one thirty-second of an inch thick, with rough edges. Within forty-eight hours the lens became opaque, but there was no inflammation or increase of tension and very little pain.

The eye made a steady improvement, so that by September 26 the patient returned to work with the eye quiet and clear, tension normal and vision of only shadows, but with the hope that in a few months an operation might be done to improve his vision.

On May 6, 1902, the largest part of the lens was found to have been absorbed, leaving only the capsule and nucleus. Vision was only shadows. The eye was then cocainized, the pupil dilated and both the anterior and posterior layers of the capsule cut, making an opening about as large as the normal pupil. There was very little reaction and the eye made a rapid recovery.

On May 16 refraction gave the following result:

O. S.+12.50 Sph.+1.25 Cyl. 120° Vision=20/20+15.00 Sph. +1.25 Cyl. 120° enables patient to read small newspaper print.

At the present time, one year after the accident and three months after the operation, the patient has normal vision and absolutely no disfigurement of the eye. By ophthalmoscopic examination a small amount of white exudative tissue is to be seen near the entrance wound, but as it is of small amount and entirely behind the iris, it does not interfere with vision in the least and that it will cause any trouble by contraction, such as detachment of the retina, seems highly improbable as a full year has elapsed since the accident without any indication of trouble.

The principal points of the case are the unusual length of the foreign body and the fact that its direction and momentum were just sufficient to place it in almost the only position it could occupy and be entirely within the vitreous chamber. Also worthy of note are the absence of any severe symptoms after the accident and operation and the saving of the eye with perfect appearance and normal vision after so large a foreign body had passed entirely through it.

See That You Are Registered.—A case recently occurred in this city, says the *Peoria Medical Journal*, which strongly emphasizes the need of physicians attending to the matter of registering their certificates under demands of the law. Dr. H. T. Thomas, who has been practicing medicine here for fourteen years, found it necessary to sue for a claim for professional services; but when the case came to trial he was surprised to find that he had absolutely no standing in court, not having registered his certificate, and was in addition mulcted in a considerable sum assessed as costs.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

61 Market Street :: :: Chicago, Ill.

Cable Address: "Medic, Chicago"

Subscription price: Five dollars per annum in advance

SATURDAY, OCTOBER 18, 1902.

OBSTINATE ACUTE ARTICULAR RHEUMATISM.

According to statistics, acute articular rheumatism has its annual curve of highest frequency at the end of October and during November. Fortunately modern therapeutics has put us in a position to cope successfully, as a rule, with the worst symptoms of the disease. Old practitioners readily admit that they no longer see the prolonged agonizing sufferings in acute rheumatism which were not infrequent thirty or forty years ago, before the introduction of the salicylates. These remedies are not a specific for the disease, but if prescribed with due reference to the indications of the individual case they give symptomatic alleviation to the majority of patients.

About one in every eight cases of acute rheumatism, however, fails utterly to be relieved by the salicylates. Some of these after a period of primary relief refuse to progress beyond the slow running subacute state. A few of the obstinate cases will yield promptly to the administration of some other coal-tar product, such as antipyrin or phenacetin, drugs that in German hands, when given in doses of from sixty to ninety grains a day, have often been found useful in severe forms of rheumatism. In a certain number of patients, however, the symptoms persist and there is prolonged discomfort in spite of any and every medication.

Most of these cases will be found to have, beside rheumatism, some associated systemic condition, on which the persistence of the symptoms really depends. Practically any infectious disease that causes the presence of toxins in the circulation may give rise to arthritic symptoms. Hippocrates pointed out that joint pains and even swelling and tenderness may accompany dysentery. Other enteritic conditions beside true dysentery, especially if associated with diarrhea, may in like manner cause articular symptoms. Influenza is well known to give rise to joint symptoms, and when it follows rheumatism by only a brief interval may cause what appears to be a relapse of the rheumatic condition.[1] On the other hand, if an attack of influenza precedes rheumatism, the latter affection is prone to run a prolonged course. Gerhardt pointed out nearly a quarter of a century ago that bronchiectasis, especially with offensive expectoration, often has a tendency to cause coincident joint complications. These are usually considered to be of toxic origin, though the not infrequent occurrence of brain abscess in these cases shows that virulent microbic, as well as toxic material, may find its way into the circulation of such patients. How much these toxins may affect usually unreactive structures such as bone and connective tissue, even when at a long distance from their seat of origin, can be seen by the drumstick fingers with knobbed ends that occur in bronchiectasis. It is not surprising, then, that rheumatic arthritis should be prolonged in these cases since the joints are in a state of low resistive vitality.

It has come to be very generally recognized of late years that what a patient takes into a case of rheumatism with him is the most important element for the prognosis of his ailment. Cardiac or nephritic conditions particularly are apt to influence the course of the disease for the worse. Blood dyscrasiæ are also serious hindrances to the development of that vital tissue reaction that enables the joints to throw off the infectious material. Hemophilic and scorbutic patients are especially liable to suffer from prolonged arthritic symptoms. The joints are delicate tissues whose trophic condition is easily influenced since more work is demanded of them than of any other structure except the heart. Any lowered state of general vitality is reflected first in these overworked tissues, and this accounts to a great extent for the often falsely called rheumatic pains that occur in run-down subjects.

Nervous conditions, too, affect the trophic state of the tissues very soon, and in neurasthenic patients prolongation of the joint discomfort of acute rheumatism often occurs. In many cases of supposed subacute rheumatism, where the joint affection—redness and tenderness with swelling—migrates frequently from one joint to another, what is really present is a neuropathic arthritism very similar to the condition known familiarly as hysteric joint. Alcoholism, by its effects on nerves, and consequently on the trophic condition of the tissues, always makes the result of trauma more serious than it would otherwise be. It is not surprising, then, to find that alcoholic patients usually suffer from more prolonged attacks of rheumatism than others. It is especially in patients who have suffered from nervous manifestations as the result of overindulgence in alcohol that hospital physicians have become accustomed to expect long drawn-out cases of rheumatism.

Careful examination of the patient for the existence of any of these accessory factors enables the physician properly to modify his prognosis of the case at the outset. The recognition of the secondary condition that may cause the rheumatism to run a longer course also gives the most helpful indication for treatment. The salicylates are not a specific for rheumatism, but they will relieve the acuter symptoms of practically all cases in which an idiosyncrasy or contraindication to their use does not exist, provided some secondary condition of the joints be not present to interfere with Nature's reaction when pain and fever are relieved. Of course, where mistakes of diagnosis are made, as, for instance, when gout

1. Nothnagel's Specielle-Pathologie und Therapie, vol. vi. Pribraam.

is treated as rheumatism, the salicylates will, according to the common experience, bring but a small measure of relief. How easily such an error may be made can be best realized from the fact that even at Johns Hopkins one patient was treated three times for rheumatism before the discovery of tophi showed that the condition was really gout. Cases of rheumatism obstinate to the salicylic treatment are always suspicious and complicating conditions should be looked for. Diligent investigation will usually reveal some good reason for the therapeutic failure.

THE UNIVERSITY MEDICAL SCHOOL.

If anyone could have foreseen thirty years ago the advances that have been made in medical education in this country the present condition would probably have been considered something very near perfection. At present, however, the defects are still prominent, and how they are to be remedied is one of the leading questions of the day. One evil certainly has not decreased: the multiplication of medical colleges beyond the actual needs with the very thinly disguised chief object of advertisement of their faculties; this has probably just about reached its culmination—it would be hard to say how very many more could well be endorsed. We may look, however, for at least a check in their multiplication if the states' present tendency to more rigid regulations for preliminary requirements continues, and some signs of the times are especially favorable as regards this point. The pressing question of the day is, what is to be the ultimate trend of the present progress, what is to be the ideal institution of the future? The differences of opinion are largely a question of detail, but some of these are important. The question whether the medical school should necessarily be an adjunct to a university, that of the teaching of the scientific and the more practical branches separately, that of the practical hospital service requirements, and many others, are being discussed, not so much on the side of their desirability, but of that of their practicability and necessity. We are going over ground that has been worked over already to a considerable extent, but which still furnishes room for thought and argument.

In a recent and widely noticed address on "Medicine and the Universities"[1] Dr. Lewellys F. Barker, of the University of Chicago, reviews the general progress of medical instruction in this country, and gives his ideas as to its needs. A special weakness of the methods of the present day, in his opinion, is in the fact that the teaching of medicine is not an exclusive life-work of those who are engaged in it, and in this he would include not only instructors in the especially scientific branches, but also those who have the chair of general internal medicine and of surgery as well of the specialties. The university medical school, he holds, should be like the other departments of the university, with its professors devoting themselves solely to instruction and original work, and in no way dependent on other work or tempted to seek income from outside sources. There are few, probably, who would disagree with the view that the professorships of anatomy, physiology, bacteriology, etc., should be endowed and their holders freed from all necessity of adding to their income from other sources. It might be somewhat difficult to prevent eminent chemists who hold professorships from being consulted by outside parties, and certain other chairs might be in the same situation. When we come to the professorships in the more practical courses this difficulty is increased, and with the specialties it is still greater. The professors in these branches must be recognized authorities in their departments, otherwise the prestige of the school will suffer. As such they will be in demand, and even if they are supplied with the amplest hospital facilities it is not to be expected that their services can always be confined within the limits. They must be constantly widening their experience and the best results can not always be obtained in a limited field of observation.

Daily experience in the practice of medicine has certain advantages and the teacher thus trained is, in our opinion, other things being equal, better qualified, more practical and less purely theoretical than one whose professional duties are confined within medical college and hospital walls. Even a whole series, moreover, of general and special hospitals attached to a university could not confine the labors of a specialist in public demand. Dr. Barker's ideal, therefore, seems impracticable in this particular, however admirable it may be in other respects. It is hardly likely that we can ever have the really university medical school meeting his definition in this country, even without the requirements above questioned. We may, however, have all the schools we need that more or less approach it. The most promising future of medical education may perhaps be found not only in the greater scientific facilities and higher standards, but also in the enlarged clinical instruction of the student. The practical hospital year may yet, as it should, be the finishing one of the medical course and the facilities may yet be provided in the present multiplication of hospitals. The great expense of carrying out all of Barker's suggestions would be an obstacle to their realization—except it may be in one or two favored places—but that alone would not be the greatest obstacle. The impossibility of isolating the highest medical ability which it should command would be a greater one.

MECHANICAL THERAPEUTIC AGENCIES.

With more accurate knowledge of pathologic conditions, their causation and natural course, the means employed by physicians for the prevention and cure of diseases have often become very different from those formerly in vogue. Surgical treatment has always been largely a question of mechanical skill and manual dexterity, the most important elements in the successful

1. American Medicine, July 26.

practice of surgery being ability to arrive at accurate anatomic diagnoses from practical knowledge of pathologic anatomy and to be able to relieve or remove such diseased conditions by mechanical measures. Surgical treatment has been rendered much easier and more certain in its results by the discovery of anesthesia and by the perfection of antiseptic measures. The management of the patient up to the time when treatment is intituted is identical, whether the physician be a surgeon or a practitioner of internal medicine, and the education and training demanded of each up to such a time is the same. While surgeons have quickly adopted mechanical measures in the treatment of diseases because it has always been considered that such are their legitimate therapeutic weapons, the followers of internal medicine have often continued to direct their efforts too exclusively to the administration of drugs to the neglect of mechanical means.

For years the value of massage and gymnastic measures in the relief of various conditions have been known, but physicians have been slow to adopt them, and massage has most often been relegated to inexperienced persons, who are "strong and can rub well." This has furnished the opportunity for osteopaths to establish themselves by appropriating one of the old, well-established means of cure. Physicians continue to be chagrined by their failure to cure certain patients whom they have treated by drugs alone, whom later events have shown could be relieved by a masseur who goes by the name of osteopath. Baths of various kinds are also valuable therapeutic measures which have been neglected by physicians. The therapeutic use of electricity has been more generally utilized, but not to such a degree as its value deserves. Fortunately the uses of light and *x*-rays as therapeutic agents are being carefully worked out by men of recognized standing in the profession, and it is to be hoped that they may be kept in some measure from becoming the property of unskilled and illegitimate quacks.

The rational explanation of the neglect of these mechanical therapeutic agents, if we may employ a rather unsatisfactory expression, by physicians lies in their lack of practical knowledge regarding them. If anything has been taught in medical schools concerning these matters it has usually been done in a very imperfect and superficial manner and only as an unimportant appendix to the other therapeutic instruction. It is highly desirable that students be given practical instruction by well-qualified teachers in these various subjects and that they be impressed with the idea that it is no more below the dignity of a physician to apply massage to an injured joint or diseased muscle than to administer a dose of calomel or perform an amputation. In smaller towns and in country places, where skilled masseurs can not be obtained, the physician must undertake the performance of these operations personally, and he should be prepared to do it skilfully and so as to obtain the desired results. With his knowledge of normal and pathologic anatomy the physician should be better qualified for this work than anyone else.

THE SALT OF THE EARTH.

The press cables report that Dr. Koulapye of St. Petersburg removed the heart from a child who had died twenty-four hours before and by the use of a certain salt solution made it beat with normal regularity for one hour. The statement, if confirmed, is of great interest. The use of massage, needle puncture or stimulation by electricity or alcohol have started hearts that had ceased to beat and prolonged life for some hours, and even carried the patients beyond the crisis to safety, but this new achievement is a step in advance. Salt seems to be concerned in some very vital processes. It has been urged that its overuse causes cancer, and evidence appears to favor the contention. Not long since it was reported that by means of a salt solution in which chlorid of sodium figured prominently ova could be developed without the necessity of any male element entering into the process. In view of the trend of events, it is certainly a matter for congratulation that the distribution of salt on the earth is not such as to lend itself kindly to the grasp of a monopoly, so that, when salt becomes the most potent of earth's forces, it still may be had by all people. Perhaps in the future we may appreciate why three-fourths of the earth's surface is occupied by salt water.

PRIMARY SARCOMA OF THE IRIS.

In their comprehensive study of sarcoma of the iris[1] Wood and Pusey bring out the point that in forty-one of the cases of enucleation for this disease histologic examination showed involvement of other parts than the iris. As would be expected from a knowledge of this fact the results as to complete cure by iridectomy are not so favorable as those of enucleation, and the authors draw from their studies the important conclusion that "When the diagnosis of iris sarcoma is established, the globe containing the growth should be immediately enucleated." There often has been observed in dealing with malignant tumors a distinct tendency to leniency in operative measures, the idea being to remove the tumor with as little disturbance as possible of the normal structures. That this has been a mistaken leniency is illustrated in the history of the operative treatment of practically every operable localization of malignant tumors. In the case of sarcoma of the iris the chance to remove the tumor by iridectomy with preservation of the eye and its vision is, no doubt, a temptation toward mistaken leniency, to resist which requires exhaustive studies of a clinical and histological nature like the one of Wood and Pusey. And, as in the case of cancer of the breast and of other organs, it appears that in the case of iris sarcoma, too, the limitations of the growth of the tumors can not be determined definitely in every case by the ordinary means of clinical observation. The microscope shows that the sarcomatous infiltration frequently extends far beyond the apparent bounds of the tumor, even into other structures than the iris. Under these circumstances the

1. Archives of Ophthalmology, 1902, xxxi, 323-383.

surgeon can not be justified in preserving an eye, thereby perchance in the end sacrificing a life, but he must advise the sacrifice of the eye in order to preserve life. The wish that always must arise in studying the results obtained by investigations of this character is this: Oh, that every surgeon, no matter in what field, would control his own work in the operative treatment of malignant tumors by conscientious and exhaustive microscopic studies to determine its thoroughness! The most brilliant operation is of no avail when a little focus or two of tumor cells are left behind, and if the surgeon were to study his own material carefully surely he would soon learn wherein his work could be improved. Such control of surgical work is laborious. It can not be done well unless the surgeon himself is trained in pathologic anatomy and histology, but matters may be expedited greatly by thorough organization of surgical services in which the several members of the staff work in unison toward the same end.

THE ATTACK ON THE MEDICAL ADMINISTRATION OF THE PENSION BUREAU.

It seems to us unfortunate that at every national meeting of the Grand Army of the Republic there should be an official, or more or less official, attack on the pension department of the government. No nation has ever been more generous to its defenders; there is nothing in history that compares with its course in this respect. Nevertheless each year the representatives of the nearly one million pensioners attack the administration of the Bureau of Pensions for its watchfulness for the interests of the government. This year the medical officers of the bureau are the special objects of attack; they are charged with being narrow, according to the press reports, "even to the extent of requiring claimants to establish their right to a pension beyond all reasonable doubt." That, of course, a reasonable doubt as to its justice should not stand in the way of a pension, seems to be taken for granted, and with such a mental state it is perhaps useless to strive. The charge of unfairness against the medical officers is, however, one that can be discussed, and apropos to this subject there appears very opportunely an address[1] by the Medical Referee of the Bureau of Pensions, delivered by request at the first annual meeting of the National Association of United States Pension Examining Surgeons at Saratoga in June last. This official, Dr. Raub, explains how, by the act of June 27, 1890, and subsequent acts, it has become necessary that each claimant's capacity for earning a support by manual labor must be considered in the adjudication of the claim, and that the bureau is only acting according to the letter of the law. Its critics assume apparently that the intention was directly contrary to the utterance, and demand that the medical employes of the bureau should violate their official oaths to please them. It may be that sometimes a deserving case meets with difficulties and delays owing to special conditions, but there can not be many such, and the medical referee shows from the records of the office how much need there is of care and watchfulness to prevent imposition. In times past there has certainly been a culpable looseness and lack of conscience on the part of many pension claimants and examiners and ample excuse for more rigid legislation. The result has been that the government and the taxpayers have been unduly burdened. The medical officers of the bureau have but one aim, that is to give all deserving cases what they are entitled to under the law and to prevent the issue of pensions to the undeserving. If in doing what is their obvious duty they are thus attacked it is not to their dishonor, but to their credit. The tax of $140,000,000 a year on the people of the United States is no trifling matter, and he is not a patriot who for mere sentimental considerations or interest would recklessly increase it. If there is a need anywhere for watchfulness for the interests of the people it is here; the medical examiner has a responsibility that is by no means light.

1. Buffalo Medical Journal, October.

Medical News.

CALIFORNIA.

Hospital Burned.—The Physicians' and Surgeons' Hospital, Stockton, was one of the buildings destroyed at the recent fire in that city, September 28.

Speeding the Parting Dean.—The faculty of the medical department of the University of Southern California, Los Angeles, gave a dinner in honor of Dr. Henry G. Brainerd, the retiring dean, September 18. Dr. George L. Cole presided, and Dr. H. Bert Ellis, on behalf of the faculty, presented Dr. Brainerd with a loving cup as a token of the esteem of his associates.

"Chiropractic Physician" Arrested.—"Dr." H. D. Palmer, Los Angeles, was arrested, September 26, charged with practicing medicine without a license. The information on which the complaint was based is said to have been that the accused, who calls himself a "chiropractic physician," treated an advanced case of tuberculosis by jumping on and otherwise maltreating the patient, thereby "stamping out the germs." Incidentally, the patient died.

GEORGIA.

Personal.—J. W. Eberhardt, Hartwell, has removed to Gilman, Texas.

Another Attempt at Blacklisting.—The Macon Medical Society has again adopted a blacklist, and hereafter any man who is financially able to pay and refuses to settle his doctor's bill will not be able to secure medical attendance unless the fee is paid in advance. Worthy objects of charity and people who are temporarily embarrassed from sickness or financial distress are not to be placed on the list.

Fined for Neglect.—For failing to provide medicine and medical attention for his children when they were ill, Scion Justice, a white man of Dublin, was fined $300 and costs by Judge Adams, of the City Court, or given the alternative of serving twelve months on the chain gang of Laurens County. This is believed to be the first instance in Georgia where a fine has been entered against a believer in Eddyism or faith cure.

University Medical Department Opens.—On October 1 the medical department of the University of Georgia, Augusta, opened for the year with appropriate exercises. Dr. Noel M. Moore delivered the opening address, in which he sketched the history of the college, from 1882, when in the incorporation papers of the Medical Society of Augusta, Ga., one of its objects was said to be "the establishment of a school of medicine." The college, with this year, begins a four-year course.

Georgia Pasteur Institute.—The second annual meeting was held in Atlanta, October 3. The physician's report showed that 65 patients had been treated, and that not one who had completed the treatment had died of rabies. The institute will be moved shortly to a new location at 85 Luckie Street. The following officers were elected: President, Dr. Henry R. Slack, La Grange; vice-president, Dr. J. H. McDuffie, Columbus; treasurer, Dr. C. D. Hurt; secretary and physician, Dr. James N. Brawner, and pathologist, Dr. Claude A. Smith, all of Atlanta.

ILLINOIS.

Personal.—Dr. George L. Williamson, Homer, left for Vienna, October 9, accompanied by his wife and daughter.—— Dr. John S. Skelly, Pekin, has accepted the chair of rectal surgery in the St. Louis College of Physicians and Surgeons.

Chicago.

To Increase Hospital License Fees.—Medical Inspector Hunt recommends increasing the license fee of hospitals from $10 to $250 a year, and that issuance depends on obtaining the consent of two-thirds of the property owners, according to frontage. He suggests also that power be given to the board of health to remit all or part of license fees in case of charitable institutions.

Suicide and Influenza.—The 14 deaths from suicide in the last week again call attention to the increase of self-destruction during the last decade. Since the first of the year there have been 321 suicides—an annual rate of 15.2 per 100,000 of population. The rate in 1890 was 12. The Health Department is confirmed, by its researches, in the belief that this increase of self-murder, like the corresponding increase of pneumonia during the period, is due to influenza, and again urges on physicians to prompt diagnosis of this disease and its radical treatment.

Typhoid Epidemic Ended.—The number of typhoid deaths last week—twenty-two—was the same as during the previous week and as in the corresponding week last year, but the duration of the disease in the fatal cases shows that the epidemic is practically at an end and that the continuous pollution of the water supply has been offset by the precautions taken in its use. During August the average duration of the fatal cases was 18.5 days; in September it was 24.3 days; since October 1 it has been 31 days. Returns from various hospitals show 11 per cent. fewer cases under treatment at the close of the week than at the close of the previous week.

Mandamus Applied for in Dunning Case.—A petition for a writ of mandamus to compel State's Attorney Deneen to sign petitions submitted to him for leave to begin quo warranto proceedings against Dr. John R. Neely and Helen S. Hay, requiring them to show by what right they are holding the offices of medical director and superintendent of nurses, respectively, at Dunning, was filed in the Circuit Court October 10. It is alleged that in place of an original examination for the position of medical director at Dunning, which was held last June, a promotional examination should have been held instead, and that Dr. Neely was not eligible for such an examination, as he had never been employed at Dunning or at any Cook County institution.

New Smallpox Nidus Discovered.—During the week 13 cases of smallpox were sent to the isolation hospital. Five other cases were found which had run their course under the supposition that they had chicken-pox. Some of these unrecognized cases attended a parochial school. All attacked were children ranging in age from 1 to 12 years, except one 23 years old. None had ever been vaccinated. A case of smallpox in a public school could not have resulted in such an outbreak, as these schools are well protected by vaccination. The parochial schools are not so thoroughly vaccinated, and vaccination is not a requisite to school enrolment. Had this law been complied with in this school at the beginning of the term the 9 pupils from that school now in the isolation hospital with smallpox would have escaped the disease.

Low Mortality.—With one exception, the number of deaths —403—reported during the month ended October 11 furnishes the lowest October mortality on record for Chicago. The annual rate was 11.53 per 1000. In the week ended Oct. 19, 1901—a phenomenally healthful year in all parts of the world —the total reported deaths were 370, and the annual rate was 10.95 per 1000. There has been nothing in the weather conditions, the character of the water supply, or any of the other factors affecting the public health, to account for this remarkably low death rate. It must be attributed solely to the campaign of education against typhoid fever carried on during the past three months, which has led to greater attention being paid primarily to the prevention of that disease, but also, and quite as valuably, to the increased care of health generally caused thereby.

Lorenz in Chicago.—Prof. Adolph Lorenz of Vienna, whose coming to Chicago was noted in the last issue of THE JOURNAL, gave a clinic at the College of Physicians and Surgeons, October 13, in the presence of several hundred physicians of Chicago. Professor Lorenz was introduced to the assembly by Dr. William E. Quine, dean of the faculty. He performed seven operations for congenital dislocation of the hip, all of the patients being children. On the evening of October 14 he was the guest of honor of the Chicago Orthopedic Society at a banquet at the Chicago Athletic Club. On October 15 he gave a lecture and clinic in the amphitheater of Mercy Hospital, under the auspices of the Chicago Medical Society. The subjects of the lecture were "Principles of Bloodless Reduction of Congenital Dislocation of the Hip-Joint," and "Principles of Reduction of Deformities."

LOUISIANA.

New Orleans Board of Health.—The Board of Health of New Orleans reorganized, with Dr. Quitman Kohnke, president; Dr. Sidney L. Theard, secretary; Dr. Joseph A. O'Hara, special medical inspector; Dr. Ernest A. White, meat inspector, and Dr. Paul E. Archinard, bacteriologist.

Personal.—Dr. John A. Rupp has been appointed deputy coroner and ex-officio city physician for the Fifth District of New Orleans, vice Dr. William H. Riley, removed.——Drs. Joseph T. De Grange, Robert W. Walmsley, Edward L. McGehee, Edmund Moss and C. Jeff Miller have been appointed physicians to the New Orleans Street Railway Company.

New Sanitary Laws.—At the quarterly meeting of the State Board of Health the president, Dr. Edmond Souchon, New Orleans, presented the following summary of the recent legislation in the state regarding boards of health:

1. Vaccination shall not be made compulsory except in cases of children attending the public schools of a parish where smallpox prevails, and when the same shall have been recommended by a majority of the local board of health.
2. Any violations of any provision or provisions, or regulation or regulations of the sanitary code shall constitute a misdemeanor, and the offender shall be punished by a fine of twenty-five dollars or thirty days' imprisonment in the parish jail for each and every offense, on conviction before a court of competent jurisdiction.
3. The police jury of each parish shall immediately after the promulgation of this act, and hereafter not later than the third regular meeting of the new police jury term, elect and appoint a parish board of health to consist of three persons, said board to be composed of a duly licensed and registered physician, a resident of said parish, who shall be chairman of said board of health and health officer, and the two other members of said board shall be selected from the police jury of said parish.
4. The term of no parish board shall continue longer than that of the body by which it was appointed.
5. The chairman and health officer of a municipal board shall receive such an annual salary as the city council or legislative body of said municipality may fix and pay.
6. The persons appointed to constitute the city board of health shall serve during the term of the body by which it was elected.

MARYLAND.

The tuberculosis commission which was recently appointed to inquire into the causes and spread of consumption in Maryland met October 8. The work proposed is to issue blanks to physicians for reports on tuberculosis cases, in order to determine to what extent the disease is prevalent. Statistics of hospitals and other institutions, and of city and state health departments will be carefully studied. Especial stress will be laid on methods of infection and methods of prevention. It is hoped that practical results of value will in time result from these studies and reports.

Cornerstone Laid.—The cornerstone of the new hospital at Salisbury was laid October 12. It will cost $50,000, and in honor of the donor, the name will be changed from Peninsula General Hospital, by which the institution has been hitherto known, to the Jackson Memorial Hospital. It will be one of the handsomest public buildings in the state. In the basement will be the apparatus for steam heating and electric lighting, the chapel, mortuary, laundry and kitchen. On the three upper floors will be the official quarters and wards. The address was delivered by Chief Judge Henry Page.

Interment of Dead from Infectious Diseases.—The State Board of Health has adopted the following rules for the interment of persons who die of infectious diseases:

In every case of death from cholera, bubonic plague or smallpox, the body is to be taken charge of at once by the local health officer and buried or cremated within 24 hours. Transportation of such bodies by rail or steamer is absolutely forbidden.

Such a body must be prepared for burial with as little disturbance of its immediate surroundings as possible. It shall be wrapped in the bed covering, secured by bandages; shall be placed in a tight coffin; the wrappings shall be saturated with 40 per cent. formalin or solution of bichlorid of mercury, 1 to 500, and the coffin closed at once.

In the discretion of the local health officer a competent undertaker may be allowed to embalm such a body, provided the body be not removed for that purpose from the spot where death occurred.

The vehicle in which such a body has been transported to the place of burial shall be washed in a solution of bichlorid of mercury, 1 to 1000.

In every case of death from diphtheria, membranous croup or scarlet fever, the body shall be prepared at once for burial by ar-

terial or cavity embalming, or by covering with a layer of absorbent cotton not less than one inch thick, securely bandaged or rolled in a sheet, this covering to be saturated with a solution of 40 per cent. formalin, or bichlorid of mercury, 1 to 500, and the body enclosed in a tight coffin at once. The head and face need not be thus covered, provided that the scalp and face and the cavities of the mouth and nose have been disinfected with an approved germicidal solution.

The lid of the coffin may have a fixed glass panel over the face to permit inspection, but not such as will permit exposure to the air. It shall be unlawful to open the coffin except on written consent and in the presence of a local health officer.

Only persons of adult age shall act as pallbearers in such cases. Interment shall be made within 24 hours of the time of death. Only members of the immediate household and necessary attendants shall be admitted to the house.

These rules are made in the exercise of the authority conferred on the board by Act of Assembly of 1882, Chap. 155. Penalties for infraction are provided.

Baltimore.

The deaths for the week ended October 11 were 183. Only 6 were from typhoid fever with 42 new cases reported, which is a gratifying decline from the previous week.

Personal.—Dr. Joseph Hart was elected a member of the first branch of the City Council, October 6. He is at present a member of the legislature. Dr. J. H. Mason Knox, Jr., sailed October 9 for Bremen.

Women's Medical College Changes.—The following additional changes are announced in the faculty of the Woman's Medical College: Dr. James Bordley, Jr., elected professor of diseases of the eye and ear; Dr. S. Griffith Davis, professor of anatomy, operative and clinical surgery; Dr. Mary A. Waters, adjunct professor of hygiene.

Physicians Resign.—The Supervisors of City Charities have received and accepted the resignations of Dr. Irving J. Spear, resident physician of the insane department at Bayview, and Drs. C. O. Gruver and P. L. Travers, assistant physicians in the institution. Drs. Samuel Lee Magness and Robert B. Samson have been selected as the successors to Drs. Gruver and Travers. The position vacated by Dr. Spear has not been filled.

Medical Schools Crowded.—The colleges have opened with crowded lecture rooms. The deans are complaining of the difficulty of accommodating the unusually large classes. At the University of Maryland there are about 400. The Johns Hopkins Medical School has enrolled the largest freshman class in the history of the school, 100 students having been accepted, of whom 8 are women. Last year the freshman class numbered 75, of whom 11 were women. The number entering this year has been limited by the accommodations to 100. The total number in the four classes is 264. At the College of Physicians and Surgeons and Baltimore Medical the attendance is equally great.

MASSACHUSETTS.

Tufts College Opens.—The new year of Tufts Medical School, Boston, opened October 1. The incoming class numbers from 110 to 115.

Charges Not Proven.—The trustees of the Worcester Insane Hospital have concluded their investigation of the charges made by twenty-five discharged attendants against the superintendent. They find that the charges are not based on fact.

Personal.—Dr. Alice E. Rowe, Springfield, has been appointed assistant physician at the Gowanda (N. Y.) State Hospital for the Insane.——Dr. J. M. Morin, Brockton, has sailed for Europe. He will spend six months in studies in Berlin and Vienna.

Jordan Hospital Burned.—The new hospital presented to the town of Plymouth by E. D. Jordan of Boston and all but completed, at a cost of about $25,000, was badly damaged by fire, September 13. There were no patients in the building as the hospital had not yet been dedicated.

Protest Against Abolition of Bacteriologic Laboratory.—The Somerville Medical Society has appointed a special committee, consisting of the president and Drs. George A. Miles, Frederick G. Smith, and John F. Couch, to protest with the board of health against the abolishment of the bacteriologic laboratory, and to request its re-establishment.

Massachusetts Insane.—According to the report of the State Board of Insanity, there are 7946 insane persons under treatment in Massachusetts. Of that number 7600 are inmates of state asylums. Of the remainder, 165 are the inmates of the McLean Hospital, a branch of the Massachusetts General Hospital. Only 178 are private patients in the 15 small private hospitals.

Stillman Infirmary, Harvard, Opened.—The Stillman Infirmary, the new hospital at Harvard, was opened, September 25, for the use of sick students. Hereafter any student taken ill may go to the infirmary and have full use of all of its privileges. The infirmary will be run on the same lines as other private hospitals, each patient being entitled to choose his own physician.

NEW HAMPSHIRE.

Silver Wedding.—Dr. and Mrs. Frank Blaisdell, Goffstown, recently celebrated their twenty-fifth wedding anniversary.

Dartmouth Opens.—The opening lecture of the one hundred and sixth annual course of the Dartmouth Medical School, Hanover, was delivered by Dr. A. Palmer Dudley, New York.

Medical Candidates for Senator.—Dr. Frederick A. Stillings, Concord, has been nominated for senator from the tenth district, and Dr. Marcellus H. Felt, Hillsboro Bridge, for senator from the ninth district.

Personal.—Dr. Jane Elizabeth Hoyt, after three years abroad, has returned and reopened her office in Concord.——Dr. Richard H. Dillon, Manchester, has been appointed surgeon of Amoskeag Veterans, vice Dr. John F. Dowd, deceased.

NEW JERSEY.

Personal.—Dr. Samuel A. Helfer, president of the Hoboken Board of Health, has returned after a trip to Europe.——Dr. Harry M. Harmon has been elected president, and Dr. Alfred B. Nash a member, of the Board of Education of Frenchtown.

Hospital Staff Changes.—Dr. John B. Probasco, Plainfield, has resigned after nearly twenty-two years of continuous service on the medical staff of Muhlenberg Hospital.——Dr. Walter S. Whitmore, Oceanic, succeeds Dr. Harry E. Shaw, and Dr. Edward F. Taylor, Middletown, succeeds Dr. Edwin T. Field, Red Bank, on the staff of the Monmouth Memorial Hospital.

American Medical Association Fund Goes to Hospital.—The balance of $2200 of the fund raised for the entertainment of the American Medical Association, when it met at Atlantic City, in 1900, has been placed at the disposal of the Atlantic City Hospital. The entertainment committee was indebted to Capt. John L. Young for $1250 for the use of his pier as a meeting place. He generously donated the whole of this amount to the hospital. It is proposed that the $2200 shall form the nucleus of a permanent fund for the benefit of the hospital.

NEW YORK.

Buffalo.

City Water Bad.—The health commissioner has reported to the board of aldermen that the city water in the Prospect reservoir is in bad condition. On September 27 samples contained 500 bacteria to the cubic centimeter. Analysis shows recent contamination.

Fumigating School Books.—The work of fumigating the text-books in the grammar schools and kindergartens of the east side has been completed by the inspectors of the health department, and Chief Clerk Schneider has prepared a statement showing the work done. In all, 54,000 text-books were fumigated with formaldehyd.

Proper Disposal of Dipsomaniacs.—Considerable discussion has recently been had as to the proper disposal of dipsomaniacs. At present the practice is in vogue of sending them to jail by the police and morning justices until they are fit to be released. This makes a criminal of one who is in reality diseased. The authorities have recently been urged to take a more humane view of such prisoners, and for that reason a conference was held between the district attorney, county attorney, police justice, morning justices, sheriff and jailers. It was suggested that a separate hospital for the detention and care of these cases be built on the site of the present jail yard, but finally a committee was appointed to see if a special dormitory can not be reserved at the penitentiary.

New York City.

Clergyman Fined for Practising Medicine.—The Rev. William M. Richie, who has an office in the Presbyterian Building, has been fined $75 for practicing medicine without a license.

Campaign Against Tuberculosis.—The Committee on the Prevention of Tuberculosis of the Charity Organization Society is making good progress. Arrangements have been made for delivering popular lectures in connection with the board of education courses and at the settlement houses.

Physicians at Odds Over a Bill.—It is reported in the daily papers that a St. Louis physician is suing a brother practitioner of New York City for $16,000, which, it is alleged, was agreed to be paid the plaintiff. The services were rendered to the son of the defendant, and extended over a period of one month. According to the petition filed, the bill is computed on a basis of $64.52 per hour, for an eight-hour day. The defendant refuses to pay the bill on the ground that it is exorbitant.

Benevolent Institutions and Public Funds.—Controller Grout is conducting a searching investigation into the management of three or four institutions supported principally from public funds, and has hinted that some of these will be deprived of this support in the near future, and as a result will have to close their doors. In this connection the State Board of Charities has reported that the charges of mismanagement and misuse of funds made against the institution in Lexington Avenue for the improved instruction of deaf mutes, have been found true, and recommends that a complete reorganization be effected within three months.

PENNSYLVANIA.

Philadelphia.

Bequests.—A bequest of $5000 to each of the following institutions was made by the will of the late David Simpson of Collingswood, N. J.: West Philadelphia Hospital for Women; Rush Home for Consumptives, and Polyclinic Hospital, all of Philadelphia.

Appointments at University.—The trustees of the University of Pennsylvania announce the following appointments: Dr. J. L. Gates, assistant demonstrator of pathology; Dr. Hidaya Noguchi, assistant in pathology, and Dr. John F. Carpenter, instructor in ophthalmology.

Advocates Great City Hospital.—Dr. John V. Shoemaker, president of the Board of Charities and Correction, has returned from a European tour. He is a still more ardent advocate of the division of the City Almshouse and Hospital. He favors a great city hospital like those of London and the large cities of the continent.

Health of Philadelphia.—For the week ended October 11 352 deaths were reported, which compares favorably with 404 for the corresponding week of 1901. There was a large decrease in typhoid-fever cases, 55 being reported, as against 110 for the preceding week and 121 for the next preceding week. Only one case of smallpox was reported for the week.

Result of New Filtration System.—Chief Engineer Hill, who has been in charge of the construction of the new system of water works with which the city is now partially supplied, has made a series of bacteriologic examinations of the water filtered at these plants. He states that "A new record has been established by the slow sand filtration system; our system will be the envy of the world." The number of bacteria are said to have been reduced to from 26 to 35 per c.c. The system also clarified the water.

Appointments and Changes.—Dr. John I. McKelway has been appointed by the city department of charities and correction as assistant chief resident physician at the Philadelphia Hospital, vice Dr. George Pfahler, resigned.——Dr. Carl Frese, medical superintendent of the German Hospital for fourteen years, has resigned. Dr. Henry Page is acting superintendent. ——At the recent annual meeting of the corporation of the Kensington Hospital for Women Dr. Charles P. Noble was reelected as one of the directors for the coming three years.

GENERAL.

Navy Medical Estimates for 1903-4.—The Secretary of the Navy has presented his estimates for the support of the naval establishment during the fiscal year ending June 30, 1904. For the Bureau of Medicine and Surgery, $485,000 is asked, an increase of $175,000 over the amount given by Congress for this year.

Government Insane Hospital Report.—The forty-seventh annual report of the board of visitors of the Government Hospital for the Insane to the Secretary of the Interior has been completed. The report is signed by Dr. Frank M. Gunnell, the president of the board, and Dr. A. B. Richardson, the superintendent of the hospital, as secretary. The report says, among other things:

> The admissions for the year were 686, the largest number in the history of the hospital. Of these 297 were from the Army, Navy and Marine-Hospital Service and 389 from civil life. Of the latter 285 were cases of indigent patients resident of the District of Columbia and 51 were non-residents admitted by order of the district courts. The recoveries number 248, or 36.15 per cent. of the admissions, and the deaths 177, which is 6.18 per cent. of the whole number under treatment, and 8.06 per cent. of the average number resident.
>
> The health of the inmates has been good during the year, with the exception of a few cases of typhoid fever during the fall months of 1901.
>
> The appropriations recommended for the hospital for 1903-1904 are as follows: For support, maintenance, etc., of 2,350 patients, at $220 per annum, $517,000. On account of the many extra expenses that must necessarily be met from this fund, connected with the opening of the new buildings and the transfer of patients, with the rearrangement of the entire system of administration, it is not believed to be wise to reduce this estimate.
>
> The repairs to the hospital will require the sum of $25,000.
>
> The sum of $6,000 is requested with which to install a filtration system at the hospital, much of the drinking water being drawn still from the river.

The report concludes with the following recommendation:

> This board is also impressed with the necessity for amendment to the law regulating commitment to the hospital and the discharge of patients therefrom. It is particularly important that authority be given the superintendent to grant trial visits before discharge to such patients as are believed to be in a condition to warrant it, and also to discharge to the custody of friends such as can be safely cared for outside of a hospital and who can not be further benefited by hospital treatment.

CANADA.

Laval University Opens.—The formal opening of the Laval University, Montreal, took place last week. Dr. Severin Lachapelle, dean of the medical faculty, welcomed the medical students. He referred to the proposal to extend the medical course at Laval to five years, and said if the last year was given to practical work it would prove of great benefit.

Bravery Medal for a Physician.—Dr. John Ferguson, Montreal, who was a visitor at the Laurentian Consumption Sanitorium at Ste. Agathe last spring when that institution was totally destroyed by fire, has been presented with a medal by the Royal Humane Society of Montreal, for the bravery he displayed in rescuing many of the patients.

The new Orthopedic Hospital, Toronto, has been formally opened. The new hospital is a most up-to-date structure. It is three stories high, and has wide and spacious verandas, which give it a very homelike appearance. Inside it is laid out most conveniently and economically. There are at present 30 patients. The surgeons in charge will be Drs. Galloway and Mackenzie.

Vaccination in Montreal.—An important by-law of the Montreal Civic Council has recently been adopted by that body. It requires that vaccination shall not be performed by any person but a duly qualified medical practitioner. It shall be performed on strictly aseptic principles. Any person or medical practitioner contravening the provisions of this law are liable to fine and in default of payment thereof, to imprisonment. The fine shall not exceed $40 and the imprisonment shall not be longer than two calendar months.

Toronto Nurses Graduate.—The graduating exercises of the Training School for Nurses in connection with the Toronto General Hospital were held October 10, when eight graduates received their diplomas. The superintendent, in her annual report, stated that since the establishment of the training school, 21 years ago, there had been graduated from it 355 nurses, 60 of whom were now in other hospitals and institutions in positions of responsibility. Dr. George A. Peters delivered the address to the graduating class, while Dr. Charles O'Reilly, medical superintendent of the hospital, presented the diplomas.

FOREIGN.

Prohibition of Arsenic for Paints in France.—The French minister of the navy has officially forbidden the use of arsenical green in powdered form for all painting in his department, and also prohibits the use of white lead, recommending zinc white in its place.

Another Charlatan Fined in Germany.—The "nature healer" Laabs advertised in a Breslau paper that he would cure under guarantee the most serious diseases. When summoned before the court, four of his former patients, all belonging to the upper classes, testified that he had cured them of some serious affection. The medical expert, privat docent Puppe, observed that such cases might occur, cured by suggestion, and that the defendant might be convinced of the truth of his assertions. In consequence the nominal fine of about $25 was imposed.

A post-graduate course in tropical medicine has been organized at Paris, open to French and foreign physicians and advanced students. Chantemesse is to lecture on bacteriologic and hematologic technic; Blanchard on parasitology; Le Dentu on surgery of the tropics; de Lapersonne on ophthalmology in the tropics; Wurtz on tropical pathology and hygiene, and Jeanselme on cutaneous affections. Brouardel

is the director of the Institute of Colonial Medicine that is organizing the course. His address is 68 rue de Bellechasse, Paris. The course lasts ten weeks. The clinical instruction will be given at the Auteuil Hospital.

Medical Inspection of Candidates for Matrimony Advocated in Spain.—We learn that at the formal opening of the courts at Madrid this fall, the minister of justice in his address proclaimed the necessity of medical inspection of candidates for matrimony. The physician, he observed, should be consulted as much and more than the priest and the justice of the peace. The authorities should refuse to marry persons that science forewarns are destined to people the hospitals, the insane asylums and the penitentiaries. This is the first time that a member of any European government has officially considered the question of the social rôle of the physician in regard to marriage.

Honors to the Founder of Psychotherapy.—Dr. Liébeault of Nancy returned to the town of Favières, where he was born seventy-nine years ago, to spend his birthday. His friends seized the occasion to place a commemorative tablet on the house where he was born. It states that A. A. Liébeault opened a new era in the medical sciences by his discovery of the systematic application of suggestion and induced sleep in the treatment of disease. He is the founder and leader of the so-called Nancy school. The inscription is signed by Voisin, Bérillon and other members of the Paris Société d'Hypnotisme et de Psychologie, and by leading psychotherapeutists of Germany, Sweden and Holland, also Vogt and Forel of the *Zeitschrift für Hypnotismus.*

Miscellany.

Treatment for Felon.—Take a hypodermic syringe and find the sensitive point, or take a lead-pencil and press the point down over the felon until you thus localize the sensitive point. Go down to the periosteum with the hypodermic and inject cocain at this point, and keep injecting it as you draw out the syringe. Then cut down to the periosteum with a bistoury, and with a syringe or probe go down into the pocket and inject carbolic acid. You have then taken the necessary steps to kill the microbe. If you are afraid of carbolic poisoning, put in some alcohol. Put on a loose dressing.—Seneca D. Powell, in *The Post-Graduate.*

Cleft Palate.—A. Vander Veer (Reference Hand-Book of Medical Science) ascribes the cause of this deformity to heredity and the want of a meat diet and of sufficient phosphates on the part of the mother. In confirmation of this view, he cites the fact that several years ago the lions in the Zoölogical Gardens of London were fed upon flesh containing too large bones for them to break and swallow. The young born while this method of feeding was pursued had cleft palates and lived but a short time. The lions were then fed upon small animals, whose bones they could break easily, and the young born afterward had perfectly formed palates.—*Dental Digest.*

Marriages.

Leo. J. Doll, M.D., to Miss Nellie C. Ziemer, both of Buffalo, N. Y., September 24.

James T. Cleveland, M.D., to Miss Emma Hartman, both of Batesville, Ala., October 1.

Ernest C. Fisher, M.D., to Miss Carrie Christian Gilliam, both of Richmond, Va., October 1.

Frank Chaffee Neff, M.D., Kansas City, Mo., to Miss Josephine Cole of Knoxville, Tenn., October 1.

A. J. Meythaler, M.D., Fremont, Iowa, to Miss Alyce Wroten of Independence, Iowa, September 11.

T. Edward Converse, M.D., Louisville, Ky., to Miss Jeanne M. Magnenat of Austin, Texas, September 29.

Lewis E. Allen, M.D., Wichita Mountain, Okla., to Miss Etta Shrieves of Morganfield, Ky., October 1.

Perry Robert Hungerford, M.D., Concord, Mich., to Miss Minnie Marilla Coykendall of Albion, Mich., October 1.

Alva F. Maine, M.D., Alameda, Cal., to Miss Kathryn C. Smith of Webster, N. Y., at Rochester, N. Y., September 13.

Arthur J. Wilkinson, M.D., Alpena, Mich., to Miss Daisy Armstrong of Flowersville, N. Y., at Detroit, Mich., April 30.

R. Douglas Haggard, M.D., New York City, to Miss F. Minter Bailey of Nashville, Tenn., at Franklin, Tenn., March 27.

Irwin Hoffman Neff, M.D., formerly of Baltimore, to Miss Bertha Seliene Bigelow of Birmingham, Mich., September 28.

Deaths.

Morris J. Asch, M.D. Jefferson Medical College, Philadelphia, 1855, who served on the staff of General Sheridan and as his personal physician during the Civil war; a successful specialist on the ear, nose and throat; a member of the New York County Medical Society, New York Academy of Medicine, the Roman Medical Society, the Medico-Surgical Society, the American Laryngological Association; surgeon to the New York Eye and Ear Infirmary, and the throat department of the Manhattan Eye and Ear Hospital, died at the residence of his sister in Irvington-on-Hudson, October 5, after an invalidism of two years subsequent to a cerebral hemorrhage, aged 70.

Abel M. Phelps, M.D. University of Michigan, Ann Arbor, 1873, some time professor of orthopedic Surgery in the University of Vermont and the University of New York; chief surgeon in the Post-Graduate Hospital; vice-president and president of the New York State Medical Society and president of the American Orthopedic Society, died at the Post-Graduate Hospital, New York, from malignant disease of the omentum, October 6, aged 51.

Robert Drayton Earle, M.D. College of Physicians and Surgeons, Baltimore, 1895, a prominent young physician of Columbia, S. C., a member of the South Carolina Medical Association and of the Medical Society of Columbia, died at a hospital in Philadelphia, September 30, after an operation for appendicitis, aged 28.

Harper B. Lackey, M.D. Bellevue Hospital Medical College, New York, 1868, one of the oldest practitioners of Scranton, Pa., died at the Medico-Chirurgical Hospital, Philadelphia, October 1, of liver disease, on account of which he had recently undergone an operation, aged 58.

Bertram Spencer, M.D. Toronto (Ont.) University, 1881, died last week from erysipelas contracted through a street railway injury, at his home in Toronto. He was professor of medical jurisprudence in Toronto University and surgeon to the Toronto General Hospital.

John R. Diller, M.D. Jefferson Medical College, Philadelphia, 1868, died at his home in Emaus, Pa., September 29, from injuries resulting from the kick of a horse a few days before. He was about 60 years old.

Frederick C. Jackson, M.D. Starling Medical College, Columbus, Ohio, 1898, captain and assistant-surgeon, U. S. Volunteers, is reported to have died at Manila, P. I., September 30, from morphin poisoning.

Leman R. Leach, M.D. Berkshire Medical College, Pittsfield, Mass., 1848, died at his home in Hamburg, N. Y., September 27, after a decline of several months' duration, aged 82.

Clark H. Wright, M.D. State University of Iowa, Iowa City, 1896, a physician of Carlsbad, N. M., died at Hotel Dieu, El Paso, Texas, September 23, from consumption, aged 35.

John J. Barry, M.D. College of Physicians and Surgeons, Baltimore, Md., 1899, died at his home in Valley Falls, R. I., after a prolonged illness, September 26, aged 34.

J. A. Chandler, M.D. Medical College of the State of South Carolina, Charleston, 1851, died at his home near Guineys, Va., October 2, after a protracted illness, aged 74.

Henry T. Sears, M.D. College of Physicians and Surgeons, New York, 1862, died suddenly from apoplexy, while dining at the Hotel Nottingham, Boston, September 26.

Alfred N. Becker, M.D. Jefferson Medical College, Philadelphia, 1896, died at his home in Schaefferstown, Pa., from lung disease, September 20, aged 30.

Frank B. McCall, M.D. Harvey Medical College, Chicago, 1900, of Nevada, Iowa, died in the Union Hospital, Englewood, September 29, after a short illness.

Frank D. Toms, M.D. Rush Medical College, Chicago, 1887, died at his home in Keyport, N. J., September 30, from apoplexy, after an illness of one day.

James N. Prince, M.D. Memphis (Tenn.) Hospital Medical College, 1887, county clerk of Borden County, Texas, died at his home in Gail, September 21.

Edward T. Noel, M.D., a well-known citizen and capitalist of Nashville, Tenn., died at his home in that city, September 26, from heart disease, aged 55.

Moritz Neuhaus, M.D., a German physician, died at Baltimore, September 22, from cancer of the stomach, after an illness of four months, aged 57.

Wallace A. LeVan, M.D. Jefferson Medical College, Philadelphia, 1890, died in his rooms at Slatington, Pa., September 16, from tuberculosis, aged 35.

John Pace Mutchler, M.D. Jefferson Medical College, Philadelphia, 1875, died suddenly in his office in Stroudsburg, September 29.

Leander D. Tompkins, M.D. Rush Medical College, Chicago, 1852, died at his home in Cassopolis, Mich., October 1, aged 85.

Deaths Abroad.

Dr. K. E. Hasse, died at Hanover, September 19, in his 93d year. He was formerly professor of internal medicine at Zurich, and later at Göttingen, and was popular as an instructor and writer. His principal works were his manuals of diseases of the nerves, heart and respiratory organs and a volume of reminiscences. He retired from practice twenty-four years ago.

Dr. B. J. Stokvis, professor of pathology and pharmacology at Amsterdam, author of numerous works on diabetes, albuminuria, cholera and therapeutic subjects. He was born in 1834 and died last month at Amsterdam.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

THE NEW GOSPEL OF DIRT.

Through the similarity of the names of the College of Medicine and Surgery (physiomedical) and the American College of Medicine and Surgery (eclectic), a surgeon mentioned on page 918 of THE JOURNAL, of October 11, was erroneously attributed to the physiomedical college. The authorities of that school inform us that the surgeon formerly held a professorship there, but the relationship has ceased.

PROFESSIONAL ETIQUETTE.

ALTOONA, PA., Oct. 6, 1902.

To the Editor:—I take the liberty of asking two questions: 1, Drs. A. and B. are practicing in the same locality. A. leaves his patients and practice in charge of B. until A. returns. Should B. turn over all cash receipts and patients to A. on A.'s return? 2. A. has been home for some time and is called to see one of his old patrons, but not being in his office at the time and the case being an emergency one, B. was called in. As soon as A. could be secured he was again called. Whose patient was this? J. U. B.

ANS.—1. B. should retain cash, unless there is an agreement, but should turn over the patients. 2. The case belongs to A., B. being called as a substitute in an emergency.

ASHTON, R. I., Oct. 7, 1902.

To the Editor:—I must protest most emphatically against your dictum (Oct. 4, page 851) that it is the duty of a physician locating in a town to call on his professional brethren already residing there. It is an unwritten law in good society that the older residents first call on the newcomer. There is no valid reason why a different usage should be observed in the case of a physician from that of any other *gentleman* unless on the theory that he is not entitled to that distinction—which the editor will scarcely contend. N. O'D. PARKS.

ANS.—The first call by the older resident applies to ladies. Men do not make formal society calls. As we said before it is an accepted custom for young physicians and for newcomers to call on older practitioners and those of longer residence in a locality. It is a mark of respect and courtesy due from the newcomer. He thus announces his arrival and his desire to be received into professional circles and friendship.

State Boards of Registration.

Ohio Standard Raised.—At the meeting of the Ohio State Board of Medical Registration and Examination on October 7, the standard of the examination for entrance to medical colleges was raised to take effect on and after July 1, 1903, as follows: Two years of the Latin language; English literature, composition and rhetoric; United States history and civics, with reference to the constitutional phases of American history; algebra through equations and plane geometry; botany or zoology; physiography or chemistry, and physics.

Student Assistants Not to Practice in Mississippi.—The attorney-general of Mississippi has given the opinion that a physician who is licensed to practice medicine under the laws of Mississippi can not take in his office an assistant to practice under his direction, unless the said assistant has himself been licensed to practice. There are numerous young medical students in the state, many of whom have been before the State Board of Health for examination and failed to pass for want of proficiency in some detail. These young students go home and study up on the branches in which they failed and then feel that they are entitled to practice without having to wait for another year. In such cases the custom has been for the student to go in the office of a licensed physician and practice medicine ostensibly as the assistant of such physician. Doctors who have a great rush of business find such assistance very convenient, but hereafter they must forego this luxury.

Oregon Report.—Dr. Byron E. Miller, secretary of the Board of Medical Examiners of the State of Oregon, reports the examination held at Portland, July 8, as follows: Number of subjects examined in, 9; questions, 90; percentage required to pass, 75; written examination; examined, 24; passed, 21; failed, 3.

PASSED.

Sch. of Pract.	College.	Year Grad.	Per Cent.
R.	Beaumont Hospital Medical College, St. Louis	1896	80.7
R.	College of Physicians and Surgeons, Chicago	1902	80.9
R.	College of Physicians and Surgeons, Chicago	1902	85.8
R.	College of Physicians and Surgeons, Chicago	1902	80.3
R.	College of Physicians and Surgeons, Chicago	1902	83.3
R.	College of Physicians and Surgeons, Chicago	1901	86.3
H.	Chicago Homeopathic Medical College	1901	81.7
H.	Chicago Homeopathic Medical College	1895	80.4
E.	Eclectic Medical Institute, Cincinnati	1870	67.5
E.	Eclectic Medical Institute, Cincinnati	1902	83.5
H.	Hahnemann Medical College, Chicago	1882	67.5
R.	Medical College of Ohio, Cincinnati	1883	75.7
R.	McGill University, Montreal	1899	88.3
R.	Rush Medical College, Chicago	1901	81.9
R.	Tennessee Medical College, Knoxville	1897	76.9
R.	Toronto University	1902	86.3
R.	University of Pennsylvania, Philadelphia	1870	74.1
R.	University of Southern California	1902	81.1
R.	Vanderbilt University, Nashville	1902	84.5
R.	Western Reserve Univ. Med. Coll., Cleveland	1882	79.8
R.	Willamette University, Salem, Ore	1900	81.9

FAILED.

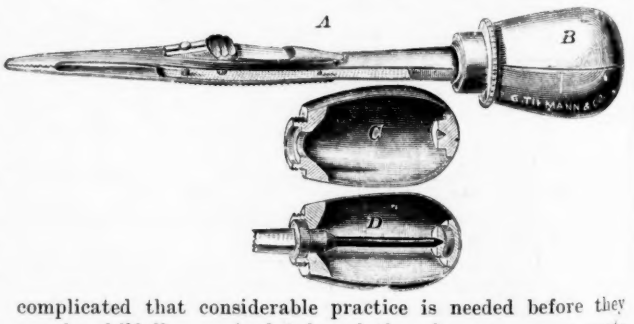
R.	Medico-Chirurgical College, Kansas City	1900	52.5
R.	Rush Medical College, Chicago	1891	72.2
H.	Univ. of Mich. Homeo. Med. Coll., Ann Arbor	1902	68.4

New Instrument.

A ROTATING TORSION HEMOSTATIC CLAMP.

JOHN JOSEPH NUTT, M.D.
NEW YORK CITY.

A number of torsion forceps have been devised, but of all those seen by the writer, none has fully met the requirements of simplicity in construction and facility in use. Some are so



complicated that considerable practice is needed before they can be skilfully manipulated and they have so many parts that great care is needed to keep them in perfect working order. Others, though very cleverly made and showing some ingenuity upon the part of the inventors, need both hands to be applied, and that alone is a sufficient drawback to prevent their being of great service.

Torsion, as practiced by many surgeons with the ordinary hemostatic clamp, is at the best an uncertain operation. If applied with one hand the danger is imminent of tearing the coats of the vessel at some point beyond the bite of the forceps,

on account of the unsteadiness of the instrument, and if applied with both hands—one to steady the instrument and one to twist—the operation is immediately robbed of one of the advantages of torsion, that of saving time.

The instrument herewith presented has thus far proved all the writer anticipated. It is practically a Fricke-Amussat clamp pivoted so as to rotate in a handle. The illustration shows the jaws with the slide-catch, A, and the olive-shaped handle, B. The handle is made in two parts so as to permit of easy and thorough cleansing. D shows how the pivot from the jaws is held in perfectly ground bearings at the collar and top of the handle. C illustrates how the halves of the handle appear when the jaws are removed.

This handle is carefully made to fit snugly and comfortably into the palm of the hand, where it is retained, in the most natural way, between the ball of the thumb and the little and ring fingers. Thus the thumb and forefinger are free to grasp the bleeding-point, fasten with sliding catch, twist and set free. There is no halting or hesitancy in the revolving motion, and the firmness of grasp guarantees perfect control and steadiness. The vessel is accurately seized and twisted without any side-to-side motion and danger of rupturing.

The advantage of torsion over ligation may be summed up as:

1. The saving of time; ligation of the smaller arteries becomes entirely unnecessary.

2. The less danger of infection; every ligation is an added possibility to infection.

3. A clear field of operation; torsion applied, the clamp is immediately removed and not left to interfere with the progress of the surgeon.

107 West Seventy-fourth Street.

Association News.

Rush Monument Fund.—The report of the Committee on the Rush Monument Fund was called for at the first meeting of the House of Delegates at the Saratoga session of the American Medical Association, but no one representing the committee being present it was passed and inadvertently not called for later. The following report from the treasurer has been sent in for publication:

HENRY D. HOLTON, TREASURER, IN ACCOUNT WITH RUSH MONUMENT FUND.

1901.	DR.
January 1—To cash on hand	$741.88
To dividends on bond and mortgage	597.00
To cash for Dr. Ellis Phillips: By L. M. Gates, for Lackawanna Co. Med. Soc.	1.00
To cash for Dr. J. S. Rea	1.00
	$1,340.88

1901.	CR.
November 22—By paid for N. P. and Great Northern Joint Bond	$1,000.00
By expenses	121.53
1902.	
May 31—By cash on hand	219.35
	$1,340.88

AMOUNT OF FUND JUNE 1, 1902.

Funds invested in bonds and mortgages, all of which can be turned to cash any day	$12,200.00
Cash on hand	219.35
	$12,419.35

There should be added to the amount given by the treasurer the sum of $2000 held by the Medical Society of the State of Pennsylvania, which society is ready to turn over this amount, with interest, as we understand it, as soon as we are ready to erect the monument.

Rules Governing Senn Medal Competition.

The Committee on the Senn Medal beg leave to call attention to the following conditions governing the competition for this medal for 1903:

1. A gold medal of suitable design is to be conferred on the member of the American Medical Association who shall present the best essay on some surgical subject.

2. This medal will be known as the Nicholas Senn Prize Medal.

3. The award will be made under the following conditions: (*a*) The name of the author of each competing essay shall be enclosed in a sealed envelope bearing a suitable motto or device, the essay itself bearing the same motto or device. The title of the successful essay and the motto or device is to be read at the meeting at which the award is made, and the corresponding envelope to be then and there opened and the name of the successful author announced. (*b*) All successful essays become the property of the Association. (*c*) The medal shall be conferred and honorable mention made of the two other essays considered worthy of this distinction, at a general meeting of the Association. (*d*) The competition is to be confined to those who at the time of entering the competition, as well as at the time of conferring the medal, shall be members of the American Medical Association. (*e*) The competition for the medal will be closed three months before the next annual meeting of the American Medical Association, and no essays will be received after March 1, 1903.

Communications may be addressed to any member of the Committee, which consists of the following: Dr. James H. Dunn, chairman, Minneapolis; Dr. M. L. Harris, 100 State St., Chicago; Dr. Floyd W. McRae, Atlanta, Ga.

Physical Diagnosis as Related to Dental College Curricula.

Dr. Cassius C. Rogers has deposited with us duly attested affidavits and manuscripts concerning the authorship of the address or lecture on "Physical Diagnosis as Related to Dental College Curricula" (published in THE JOURNAL of June 21, 1902, and further mentioned July 5, page 30, and July 26, page 209). These affidavits are abstracted below, as we promised to give each side a chance to reply. Copies of the affidavits were submitted to Dr. A. H. Peck for any reply he might see fit to make, and his reply is that he denies several of the allegations, but that, having commenced suit against Dr. Rogers, he does not wish to submit any further evidence here. The matter is now closed as far as THE JOURNAL is concerned.

THE FURTHER STATEMENT FROM DR. ROGERS.

The first affidavit is by Dr. Rogers himself, and states that during the year 1901-2 he delivered a series of lectures before the Chicago College of Dental Surgery, and that on Oct. 16, 1901, he delivered the lecture before the college on the subject of "Physical Diagnosis as Related to Dental College Curricula," which was taken down in shorthand, and afterward typewritten and mimeograph copies taken. To this affidavit are attached a pencil-written manuscript and a typewritten manuscript which the affidavit declares respectively to be the original notes in the preparation of the lecture and the typewritten copy with interlineations from which the lecture is alleged to have been delivered. The affiant then states that at the time of the delivery of this lecture he had never heard of the lecture delivered or claimed to have been delivered by Dr. A. H. Peck, and that the first he knew of the address was its publication in THE JOURNAL.

The second affidavit is by the stenographer, and is a repetition of the affidavit mentioned in our issue of July 5, and further states that on or about Jan. 22, 1902, Dr. A. H. Peck asked her for a copy of all the lectures delivered by Dr. Rogers during the said course of lectures, and that she accordingly delivered to him the said copies in the first week of May, 1902, and received his check in payment.

The third affidavit is by J. B. Paine, of 805 Tacoma Building, Chicago, an attorney, who states that he has examined the records of the Northwestern University Dental School; that he has gone over the volume of lectures delivered before the students of said school in the session of 1899-1900 by Dr. Peck; that he was informed by the officers of said school that the said volume was bound several months after the close of the school year, and was intended to include all the lectures delivered by Dr. Peck during that year, and that he found that this copy did not contain any lecture on the subject of "Physical Diagnosis as Related to Dental College Curricula" or any similar subject.

The fourth affidavit is by Dr. Wm. C. McDonough, who says that on or about June 23, 1902, he went to the office of Dr. A. H. Peck with Dr. C. C. Rogers, at which time Dr. Rogers asked Dr. Peck where he had obtained the article in question, to which Dr. Peck replied that he had written it himself. The affiant further states that thereon Dr. Rogers produced the lecture delivered before the Chicago College of Dental Surgery, Oct. 16, 1901, and that at that time Dr. Peck stated that when he prepared his address as published in THE JOURNAL he had never heard or seen the lecture as delivered by Dr. Rogers. The affiant further states that Dr. Peck at that time stated that he had had his address prepared for two years, but had not before made it public and said nothing then of having delivered it in April, 1900.

New Members.

The following is a list of new members for the month of September, 1902:

ARKANSAS.
Ellis, J. B., Helena.

CALIFORNIA.
Beede, W. M. F., Stockton.

FLORIDA.
Helms, J. P., Tampa.
Pierpont, J. Harris, Pensacola.
Perry, P. C., Jacksonville.

GEORGIA.
Hardin, R. M., Rome.

ILLINOIS.
Horner, C. P., Tampico.
Oliver, E. W., Winona.
Ferguson, H. M., Morris.
Newell, S. C., Larchland.
Yoder, H. L., Morton.
Shamel, J. Y., Gibson City.
Ziliak, A. L., Olney.
Cuthbertson, H. A., Chicago.
Hess, J. H., Chicago.
Patton, D. H. R., Chicago.
Trapp, A. R., Peoria.
MacKenzie, W. W., Chicago.
Jacobs, R. H., Samoth.
Gordon, R. E., El Paso.

INDIANA.
Dancer, C. R., Ft. Wayne.
Thomas, C. E., Leesburg.
Willeford, Geo. W., Washington.
Detamore, J. E., Union City.

INDIAN TERRITORY.
Hailey, W. P., Wilburton.
Horine, W. H., Haileyville.
Sames, W. W., Gowen.
McClure, Bartony, Witteville.

LOUISIANA.
Gaster, L. D. S., New Orleans.
Levy, J., New Orleans.
McGehee, E. L., New Orleans.
Ryan, J. J., New Orleans.
Kiblinger, E., Avayelles Parish, Plancheville.
Hanson, T. H., Donaldsonville.
Butler, T. M., Summerville.
Toler, E. McL., Woodland.
Stark, Thos., Thibodaux.
Landry, A. A., Assumption Parish, Paincourtville.

MAINE.
Gehring, J. G., Bethel.

MARYLAND.
Brock, C. E., Baltimore.

MASSACHUSETTS.
Lithgow, R. A. Douglas, Beverly.
Upton, C. L., Shelburne Falls.
Cutler, C. N., Chelsea.

MICHIGAN.
Wilson, S. J., Detroit.
Whinery, J. B., Grand Rapids.
James, W. B., Eloise.
Wade, G. B., Laingsburg.

MINNESOTA.
Wiedow, Henry, Round Lake.

MISSISSIPPI.
Champenois, Cecil, Meridian.

MISSOURI.
Duncan, J. H., St. Louis.
Carthrae, Lewis, Corder.

MONTANA.
Sievers, J. R. E., Butte.

NEBRASKA.
Bellwood, W. S., Alliance.

NEW JERSEY.
Devlin, Frank, Newark.
Guion, Edward, Atlantic City.
Tattersall, J., Paterson.
Rogers, Geo. A., Newark.
Parker, G. H., Trenton.
Craythorn, C. J., Trenton.

NEW YORK.
Scott, G. T., Davenport.
Lusk, W. C., New York City.

NORTH CAROLINA.
Tayloe, D. T., Washington.

OHIO.
Weaver, W. B., Cincinnati.
Tunison, I. F., Cincinnati.
Schmidter, W. C., Cincinnati.
Schenck, W. E., Cincinnati.
Holst, E. B., Rossford.

OREGON.
White, C. S., Gervais.

PENNSYLVANIA.
Skinner, J. O., Chambersburg.
Meredith, C. C., Pittsburg.
Dorworth, E. S., Bellefonte.
Atlee, J. L., Lancaster.

SOUTH DAKOTA.
Hanson, H. P., Beresford.

TENNESSEE.
Van Meter, L. M., Memphis.

TEXAS.
Loving, R. S., Ft. Worth.
Hix, R. W., Vernon.

WASHINGTON.
McNerthney, J. B., Tacoma.

WEST VIRGINIA.
Deyerle, J. H., Harding.

WISCONSIN.
O'Malley, P. H., Madison.
Williams, W. E., Cambria.
Bair, F. M., Benton.

Societies.

COMING MEETINGS.

New York State Medical Association, New York City, Oct. 20-23, 1902.

Conference State and Provincial Boards of Health of North America, New Haven, Conn., Oct. 28-29, 1902.

Oklahoma Territory Medical Association, Guthrie, Nov. 11, 1902.

Southern Surgical and Gynecological Association, Cincinnati, Nov. 12-14, 1902.

Miami Valley (Ohio) Medical Society.—This society held its twenty-fifth anniversary meeting at Loveland, October 13 and 14.

Roswell Park Medical Club, Buffalo.—This club has elected officers for the ensuing year as follows: President, Dr. Julius H. Potter; vice-president, Dr. William C. L. Meisberger, and secretary and treasurer, Dr. George F. Cott.

Mower County (Minn.) Medical Society.—This society was organized at Austin, October 3, with Dr. William L. Hollister, Austin, president; Dr. Willis F. Cobb, Lyle, vice-president; Dr. Christian A. Hegge, Austin, secretary, and Dr. George J. Schottler, Dexter, treasurer.

Boulder County (Colo.) Medical Society.—This society met October 4. In addition to the scientific program steps were taken to secure a permanent home for a library and medical reading room for the society and visiting physicians. A committee on legislation was appointed, and also a committee on public health.

Brown County (Minn.) Medical Society.—After lying dormant for nearly seven years, this society is about to be reorganized in accordance with the suggestions of the American Medical Association. At a meeting held in New Ulm, September 6, presided over by Dr. Jacob W. B. Wellcome, Sr., Sleepy Eye, it was decided to call a meeting, reorganize and elect officers.

New York State Medical Association.—The annual meeting of this association will be held at the New York Academy of Medicine Building, New York City, October 20 to 23. The program is a most interesting one, including a symposium on colds, one on typhoid fever, one on pneumonia, and one on Roentgen rays. Among the guests from other states invited to present papers are Drs. William J. Mayo, Rochester, Minn.; Albert J. Ochsner, Chicago; W. S. Thayer, Baltimore, and Alfred Stengel, Philadelphia.

Conference of State and Provisional Boards of Health of North America.—The seventeenth annual conference will be held at New Haven, Conn., October 28 and 29, under the presidency of Dr. H. M. Bracken of Minnesota. This conference has for its object the assembling from time to time of a body of executive sanitary officers to exchange opinions and consider questions relating to the practical administration of public hygiene. This assembly differs from the American Public Health Association in devoting its attention exclusively to subjects which are of direct interest to the executive officer of a health department, and in endeavoring to answer the questions which arise daily to every health officer as to the practical application of accepted truths of sanitary science. Its membership includes thirty-five boards of health.

International Convention for the Unification of Heroic Remedies.—This convention was held in Brussels, Belgium, September 15. The object of the convention was to devise means of regulating poisonous preparations, to secure a uniform percentage of strength in heroic remedies. There were nineteen governments represented, each sending a physician and a chemist. Dr. Frederick B. Powers, formerly professor of chemistry at the Wisconsin University, but now a resident of London, England, was the United States chemist, and Dr. Horatio C. Wood, Philadelphia, the physician. It was a very harmonious meeting, and an agreement was reached establishing a standard of strength for these drugs—all tinctures to be 10 per cent. It was decided that the Belgian government should ask all the nations represented to carry out this agreement. In most countries—the United States and Great Britain being the exceptions—the sale of drugs is regulated by law, and the change can be readily made by such governments.

American Academy of Railway Surgeons.—The ninth annual meeting of this association was held in Kansas City, Mo., October 2 and 3. The president, Dr. August F. Jonas, Omaha, chief surgeon of the Union Pacific Railway, delivered the annual address on the subject of "Negligence." The papers presented dealt chiefly with the responsibility of railway companies, medical experts, surgery and hygiene, and a symposium on "The Surgical Organization of the Railway Service," which included papers and a general discussion of the surgical and hospital systems of railways. The local members of the academy entertained the members at a banquet at the Midland, over which Dr. August F. Jonas, Omaha, presided as toastmaster. The election of officers resulted as follows: President, Dr. Luther Sexton, New Orleans, Illinois Central; vice-presidents, Drs. Arthur L. Wright, Carroll, Iowa, Chicago Great Western, and John W. Perkins, Kansas City, Mo., Union Pacific and Santa Fe; secretary and treasurer, Dr. Thomas B. Lacey,

Council Bluffs, Iowa, Wabash, Illinois Central and Chicago and Northwestern, and editor, Dr. R. Harvey Reed, Rock Springs, Wyo., Union Pacific.

International Congress for Care of the Insane.—The resolutions voted by this congress which met at Antwerp in September, favored the "family colony" for suitable cases as the most natural, the freest, the best and the most inexpensive manner of caring for the indigent insane, while at the same time it constitutes an important factor in the treatment. It can be an annex feature of any institution in charge of a psychiatrist, but the ideal is the foundation of central establishments in suitable country localities to serve as nuclei for the foundation of the family colonies. These colonies do not encroach on the existing establishments as they are adapted only for a restricted number of insane patients, but they solve the problem of the overcrowding of these establishments, and in a practical, active and inexpensive manner. The delegates were unanimously in favor of organizing an asylum-school for idiot and imbecile children in the family colonies, and of increasing the number of physicians in asylums and relieving the overworked attendants. They also favored the organization of a surgical service in such institutions. The congress adjourned to meet in 1904 at Edinburgh.

Second International Congress of Electrology.—Among the communications presented at this congress, which closed its sessions at Berne, September 6, some proclaimed the advantages of electric treatment of eczema and certain other skin affections, of constipation, gastralgia, exophthalmic goiter and pulmonary tuberculosis. Fort of Paris advocated electrolysis for strictures of the esophagus and mitral valve, and Chatzky of Moscow lauded the continuous current for acute inflammations. The addresses were on "Electro-Diagnosis"; "Surgical Electrolysis"; "Radiology and Radiography of Internal Organs"; "Accidents from the *X*-Rays" by Oudin of Paris, and "Dangers of Industrial Electric Currents." An exhibition of electric appliances was an important feature of the congress, as were also Kronecker's electric experiments at his Institute of Physiology. Narcosis was induced in a dog with the interrupted current, placing the cathode on the skull and the anode over the kidneys. In another animal the heart was arrested with a current of 240 volts, and then started to beating again with the same current after opening the thoracic cavity. The next congress will be held at Amsterdam in 1905.

Vermont Society for the Study and Prevention of Tuberculosis.—This society was organized at Burlington, September 28, by a number of physicians and laymen from the different parts of the state. A constitution was adopted, and various phases of tuberculosis were discussed. Officers were elected as follows: President, Hon. E. C. Smith, St. Albans; vice-presidents, Drs. Don D. Grout, Waterbury, and Charles W. Peck, Brandon; secretary, Dr. H. Edwin Lewis, Burlington, and treasurer, H. L. Stilson, Bennington. The following resolutions were adopted:

WHEREAS, The widespread occurrence of tuberculosis in any community presents problems which in the highest interests of humanity, charity and the public welfare should engage the attention of all thinking people; and

WHEREAS, Tuberculosis, a disease that scientific study has shown to be preventable and curable to a marked extent, is responsible for more suffering and deaths in Vermont than all other transmissible diseases combined, and

WHEREAS, It has been amply demonstrated that the arrest and cure of tuberculosis can be best accomplished in properly arranged and controlled sanitaria,

Therefore, Be It Resolved, That we, the Vermont Society for the Study and Prevention of Tuberculosis, do hereby earnestly urge and recommend the establishment of a state sanitarium in Vermont for the proper care of consumptives; and

Furthermore, Be It Resolved, That the committee on legislation of this society should present the matter for the consideration of the assembly of 1902, and use every legitimate means to insure the passage of a bill providing for the establishment of a Vermont sanitarium for state consumptives. Also these resolutions:

WHEREAS, It is the consensus of scientific opinion that bovine tuberculosis is a real menace to public health; and

WHEREAS, The efforts of the Vermont board of agriculture and cattle commission to eradicate tuberculosis from Vermont cattle have been attacked and severely criticised;

Therefore, Be It Resolved, That we, the Vermont Society for the Study and Prevention of Tuberculosis do express our appreciation of the honest and painstaking work of the Vermont cattle commission;

Resolved, That whatever modifications may be made in the present laws relative to bovine tuberculosis we earnestly protest against the removal or relaxation of any measures which tend to lessen or eradicate bovine tuberculosis.

International Congress of Gynecology.—The fourth congress convened at Rome, September 15, with more than 450 members registered, including 20 from the United States, 57 from France and 7 from England. The membership of the largest previous congress was 316. In the addresses on "Medical Indications for Induction of Labor," Simpson asserted that the habitual death of the fetus at a certain month is an indication for intervention before this date. He, with others, included tuberculosis, uncontrollable vomiting, certain cases of hemorrhage and the nephritis of pregnancy among the indications whenever the prognosis of the pre-existing or intercurrent disease is rendered more serious by the pregnancy, or the pregnancy is doomed on account of them. Schauta stated that 95 per cent. of women with heart disease can go through a pregnancy without much trouble. In case of mitral stenosis, however, he advocates interruption at the first sign of disturbance of compensation, and also in rapidly progressive tuberculosis, especially the laryngeal form. Hofmeier thinks that chronic nephritis entails such disturbances that the fetus is lost when ordinary treatment fails to relieve, and consequently he advises induction of labor at any period, although there is very little danger of eclampsia. This danger is great, on the other hand, in case of the nephritis of pregnancy, and this also indicates termination of the pregnancy, while acute nephritis is not an indication for it, and is not influenced by it. Rein advocates intervention in case of nephritis and in heart disease, and reports 11 women thus treated and all cured, while 7 of the children were saved. He has induced labor 41 times in 2690 obstetric cases, while Pinard's list is 20 times in 22,708 cases in the last ten years, with 15 recoveries. Among other subjects discussed were "Hysterectomy in the Treatment of Puerperal Infection"; "Tuberculosis of the Female Genitalia" and "Surgical Treatment of Cancer of the Uterus." Cullen of Baltimore was invited to deliver an address on the latter subject. The program was carried out as announced in THE JOURNAL of September 13, p. 639. Among the Americans present were Drs. Mann, Engelmann, Kelly, Jewett, Cullen, Wakefield, Barton, and the late Dr. John Byrne, with Brennan of Montreal. On invitation of the Russian government, St. Petersburg was selected as the meeting place of the next congress.

MEDICAL SOCIETY OF VIRGINIA.

Thirty-third Annual Meeting, held in Newport News, Sept. 23, 24 and 25, 1902.

The President, Dr. Richard S. Martin, Stuart, in the Chair.

Welcome.

DR. JOHN W. AYLER, Norfolk, welcomed the society on behalf of the profession of Newport News, and referred to the courage and spirit of the Virginia physicians, welcoming the older ones as the fathers of the Medical Society of Virginia and bidding the younger men welcome and Godspeed in their efforts to relieve suffering humanity.

DR. ROBERT LEE PAYNE, Norfolk, in his address to the public, informed the assembly of the aims and objects of the society.

President's Address.

The President characterized his address as "A plain talk on some of the benefits to be derived by thorough organization of the medical society, both to the laity and the profession, with mention of the most prevalent causes of sickness, race decay and their prevention." He asked whether the medical profession had attained that high and noble position to which it was entitled, discussed this matter at length and referred to the vast progress made in medicine in the last twenty years. He urged that young men seeking to enter the profession should possess a better preliminary education; that there should be an entrance examination on educational qualifications entirely distinct from the medical examination; and that the laws should be so amended as to drive from the state cancer doctors, osteopaths, Eddyites, and all other forms of quacks. He held that there should be a complete and thorough reorganization of the society, as in Virginia only one in ten physicians belong to the American Medical Association, and only about one in three or four are affiliated with the state and county societies. Every county in the state should have a medical society organized under the plan suggested by the American Medical Association. By organization medical laws could be enforced and the state can be freed from irregular practitioners and quacks only when each county has a committee whose duty it shall be to see that the medical laws in its own district are enforced. He then spoke of the harm done in the profession by reason of petty jealousies and of the necessity of obtaining better medical laws and of the repeal of obnoxious and dangerous legisla-

tion. He next discussed at length the prevalent causes of sickness, and race degeneration, including expectoration, bad ventilation, the cigarette, drug and alcohol habits and also decried patent medicines, commended pure food laws and mentioned the treatment of smallpox, vaccination, the evils of unhygienic dress and the follies of mothers.

Colored Physicians Not Admitted.

Two organizations of colored physicians, the Old Dominion Medical Association and the Tidewater Medical Association, presented petitions asking recognition and admission to the Medical Society of Virginia, and a committee was appointed consisting of Drs. W. L. Robinson, George Ben Johnston and J. L. Shackleford, to report on this petition. After considerable discussion, the petitions were rejected by a vote of 52 to 23.

An excellent series of scientific papers was given and discussed.

Reorganization Proposed.

DR. CHARLES GRANDY presented a paper on "Organization of the American Medical Association," and proposed a plan for reorganization of the state and county societies, which was referred to a committee of five to report on at the next meeting.

Election of Officers.

At the afternoon session, September 25, the following officers were elected for the year: President, Dr. John N. Upshur, Richmond; vice-presidents, Drs. William F. Cooper, Newport News, Richard W. Sanders, Max Meadows, and Junius F. Lynch, Norfolk; recording secretary, Dr. Landon B. Edwards, Richmond; corresponding secretary, Dr. John F. Winn, Richmond, and treasurer, Dr. Richard T. Styll, Newport News. Dr. Clifton M. Miller, Richmond, was elected to fill Dr. Upshur's place on the executive committee and Dr. William S. Christian, Urbanna, was elected to deliver the annual address. Roanoke was selected as the place of meeting for 1903. Drs. Stuart McGuire, Richmond, and Richard S. Martin, Stuart, were elected delegates to the American Medical Association.

Banquet.

The meeting of the society closed with an elaborate banquet at the Hotel Chamberlain, Old Point Comfort. Covers were laid for 300. Dr. William F. Cooper, president of the Newport News Medical Society, officiated as toastmaster, and Drs. John N. Upshur, Richmond, Edwin Ricketts, Cincinnati, Hugh T. Nelson, Charlottesville, Elliott T. Brady, Abingdon, J. Wilton Hope, Hampton, and J. Allison Hodges, Richmond, and Messrs. W. F. Johnson and A. A. Moss, responded to toasts.

CHICAGO MEDICAL SOCIETY.

Regular Meetings, held October 1 and 8, 1902.

The President, Dr. William A. Evans, in the Chair.

October 1.

The Typhoid Fever Situation in Chicago.

DR. ARTHUR R. REYNOLDS read a paper with this title. He said that the one supreme measure necessary to prevent recurrences of epidemics of this disease is the protection of the water supply from sewage pollution.

While the laboratory investigations have been unable to demonstrate typhoid-infected milk during the present epidemic, the presence of the typho-colon group has been repeatedly detected. Although special search has been frequently made for the typhoid bacillus in the city milk during the last eight years, it has been found in only three instances, and those in local epidemics, where the relation of cases of the disease and a common milk supply was clearly established.

The practical point with reference to the sanitary quality of the city water supply is that low lake levels cause increased pollution; high lake levels improve the sanitary quality, and neither the one nor the other will be perceptibly affected by "the abstraction of from 300,000 to 600,000 cubic feet per minute" through the drainage canal. The abstraction of double the maximum quantity would not be seriously felt, and it is to be hoped in the sanitary interest, not only of Chicago, but of all points between Chicago and New Orleans, that this flow will some day be secured.

The Etiology of Typhoid Fever.

DR. WM. K. JAQUES read this paper. A constant stream of pathogenic germs is passing through the intestinal tract. To prevent the invasion of these into the tissues there must be present the destructive fluids and resisting powers of the intestinal cells. The greater the virulence of the germ the greater must be the resistance to prevent invasion. The transmission of the typhoid bacillus from the intestinal or urinal tract of the diseased into the alimentary tract of a susceptible individual is necessary to produce typhoid fever. The key to typhoid sanitation is the prevention of the contamination of food and water by human dejecta.

The Occurrence of Typhoid Bacilli in the Urine During Typhoid Fever.

DR. ADOLPH GEHRMANN followed with a paper on the results of investigations covering 71 specimens of urine from 68 typhoid patients in the Cook County Hospital. None of these were specially selected, except in so far as it was positively recognized that typhoid was present. No attempt was made to show at what stage during the sickness the bacillus may appear in the urine or to study the conditions that may be incident thereto. The report is preliminary in that there has not been opportunity to study the histories of these cases and add the clinical to the bacteriologic data. The urine was collected in large sterile test tubes, without any special antiseptic precautions. The tubes were filled early in the morning and the cultures from them were started before noon, an average time of four to six hours intervening. The method employed was to spread loopfuls of the specimen over inclined agar and incubate the cultures for twenty-four hours. Colonies were thus at once obtained, and these were examined for the presence of motile bacilli. Transplantations from the suspected colonies were then made and the resulting pure culture was carried through on gelatin agar, glucose agar, litmus, milk and bouillon for differentiation. A test with positive reacting typhoid blood was then made to verify the results. In a few instances the specimens were immediately centrifuged, and the sediment examined by direct microscopic preparation. When large numbers of motile bacilli are found in specimens so treated, one may almost rest assured that typhoid bacillus is present. From the 71 specimens the typhoid bacillus was isolated 15 times, giving a percentage of 21 per cent. positive results. In 12 specimens *Bacillus coli communis* was found; in 6, pus cocci; in 31, saprophytes, more or less numerous, and 20 specimens were sterile. The typhoid and colon bacillus were found mixed in 3 of the cases. As regards cloudiness of the urine and the presence of typhoid bacilli, he found the bacillus in 9 cases of cloudy urine among the 15 positive specimens.

Typhoid Bacilli in the Blood.

DRS. E. K. KERR and F. G. HARRIS read a joint paper on the subject. The situation was reviewed from the time of the discovery of the bacillus down. The technic of examination by culture and agglutination was given in detail.

In the author's list of 56 cases, 31 were positive and 25 negative. In a series of 102 cases with 118 examinations compiled from recent writers, the bacilli were found in the first week in 87.5 per cent.; second, 70 per cent.; third, 50 per cent.; and later 25 per cent. In the 6 relapses examined they were found in every case. The general average is 70 per cent. Cultures were positive before the Widal test was obtained in 37 per cent. of 81 cases when this relation was reported. It was shown that the bacilli are comparatively few. The practical application lies in the easy method of isolating the bacillus, and in the diagnostic aid thus offered, which is sure, early in appearance, and fairly easy, at least in hospital cases.

October 8.

Ninety Cases of Typhoid Fever in Infants and Children.

DR. ISAAC A. ABT stated that a large proportion of the cases ran the entire course of the disease without receiving any drugs. Patients were kept in bed and, as near as possible, absolutely quiet. They were encouraged to change their position in bed frequently. This enforced rest in bed could not be strictly adhered to in young children. It was necessary to pick them up on account of restlessness, or to change their napkins, and for their baths. The mouths were kept

scrupulously clean by washing with boric acid solution. The usual precautions concerning the prevention of bed-sores by rubbing the back with alcohol was practiced. During the febrile period the patients were kept on a liquid diet, consisting almost exclusively of milk, except in those rare cases where milk could not be borne. After the temperature had fallen to normal, strained gruels, broths and fruit juices were permitted. The patients were all encouraged to drink large quantities of water. No solid food was allowed until the tenth day of normal temperature.

The treatment of the temperature was hydrotherapeutic. A temperature above 102 degrees was treated by tepid sponging; if the temperature rose still higher and was not reduced by the sponging, the patient was placed in a cold pack. In those cases where the fever was not controlled by either of the foregoing, the patient was given a cold bath. He was placed in a comfortable, warm bath of about 90 F. This was gradually reduced to 80 F. He found it rarely necessary to reduce the temperature of the bath much below this point. At times, however, where the fever did not yield, the bath temperature was reduced to 70 or 75 F. No antipyretic drugs were employed to reduce the temperature in any case. In those cases showing nervousness or restlessness, an ice-bag applied to the head sometimes gave relief. At times a small dose of Dover's powder or sodium bromid was given for restlessness and sleeplessness. Constipation was treated by enemata, and cases of severe diarrhea were given small doses of deodorized tincture of opium. In the prolonged cases, which showed the exhausting effects of the disease, where the pulse was rapid and weak, whiskey or brandy was employed, and moderate doses of strychnia were given. A child ten years of age was given 1/100 of a grain of strychnia three or four times a day. A child three years of age was given 1/200 of a grain three or four times a day. Intestinal antiseptics were rarely employed. Complications were treated, as they arose, on a rational plan. At the close of the febrile period, patients were frequently given a tonic in a routine way, the favorite being the elixir of iron, quinin and strychnia.

The Dietetic Management of Typhoid Fever.

DR. FRANK X. WALLS followed with a paper on this subject. He paid particular attention to "milk alone," saying that it was objectionable as a typhoid diet: 1. Because it is intolerable as a sole food for the adult in health or disease. 2. It contains a large amount of poisonous filth. 3. In digestive tract infections it feeds the parasitic intestinal flora rather than the host. 4. The systematic intoxication from milk poisoning is serious and often fatal. 5. We have abundant other substances that are without these objectionable features, and more palatable, equally abundant, very nutritious, easily digested and readily assimilated.

Successful treatment depends in a large measure on the attention that is given to the diet. The keynote of the dietetic management is individualization. Water should be given freely, plain or charged. Gruels, well cooked and seasoned, strained and malted, if preferred, made from oatmeal, rice, barley, arrowroot or other cereals, have a moderate nutritive value. Meat broths or soups, of beef, mutton or chicken have a slight nutritive but more stimulant value. Meat juice, made by the cold method, contains from 7 to 9 per cent. of proteid, and is a good food, and from 5 to 15 ounces may be given a day. White of egg added to water, gruels or soup enriches them. The yolk of the egg is very rich in fat, and beaten in with cereals, it makes a very palatable, nutritious food. Jellies, calf's foot or fruit, are a delicate addition. Fruit juices, of orange, grape, berries, lemon or pineapple are tonic beverages that break the monotony of the sameness of a typhoid diet. Cream and milk, but the best only, may be given very cautiously with other foods; given plain, or flavored with malt, coffee, chocolate, etc., acidulated, peptonized, pancreatinized. Koumyss, buttermilk, and junket are nutritious milk foods. This list is merely suggestive, and may be as varied as the needs of the individual require. The concentrated foods are rarely required, though somatose, tropon, plasmon, plasmon coca or condensed milk are at times of service. Patients should not be overfed. The physician should watch the abdomen for gaseous distention of the bowel, and the stools for evidence of indigestion or food putrefaction. If present, correct the diet rather than administer antiseptic or anti-fermentative remedies. Alcohol may be used according to the particular indications in the specific case.

Hydrotherapeutic Treatment of Typhoid Fever.

DR. HENRY B. FAVILL spoke on this subject. The statistics in favor of the bath treatment are favorable as compared with other forms of treatment. He referred to the typical, original Brand bath, which he defined as the vigorous rubbing and manipulation of the typhoid patient, well immersed in water of a temperature varying from 60 degrees to 80 degrees. The manipulation of the bath is an essential part of the process; the temperature is subject to variation. Although the antipyretic value of the bath is important, he considers it a mistake to centralize attention on its antipyretic effects. Its effect on the patient is sedative and tonic. A patient who is subjected to an intelligent administration of a cold bath in typhoid, typically and regularly, shows marked sedative effects, as manifested, first, by a feeling of comfort, as against a previous feeling of malaise; second, as manifested by a tendency to sleep, as contrasted with previous restlessness and inability to sleep. The second phase of the bath was its tonic effect, as manifested by an improvement in the cerebral condition, a condition of clearness of mind as against hebetude; of alertness as against indifference; of comfort, physical and psychical, as against distress. This was a fair index of improved tone. As to the digestive tract, there was typically a better digestion, as evidenced by the decidedly less typhoid character of the tongue, and by a less tendency to meteorism.

Surgical Treatment of Hemorrhagic Pachymeningitis.

DR. JOHN C. MUNRO of Boston read this paper (by invitation). His conclusions were that: 1, alcohol, syphilis, acute and wasting diseases and trauma apparently bear some causative relation. 2. The symptoms are those of diffuse subdural hemorrhage coming on slowly, producing mental irritation, spasm and rigidity of the extremities, convulsions, and later on paralysis, the sequence being more or less irregular. The treatment is surgical, and should be instituted as early in the disease as possible. Without operative relief, in cases where pressure symptoms manifest themselves, the prognosis is practically hopeless. Early operation gives the best chance for recovery.

DISCUSSION.

DR. A. J. OCHSNER said a difficulty which surgeons encountered in connection with hemorrhagic pachymeningitis was the lack of history. They came as hopeless cases, frequently in a comatose condition, and it was often difficult to say whether they were intoxicated, under the influence of a drug, or whether they were in the last stages of uremia. He had operated on a number of such cases, and, with two exceptions, all with fatal results. In one case, aside from a hemorrhagic pachymeningitis, the patient suffered from a cerebral hemorrhage. After the subdural clot was removed, symptoms of pressure persisted. Autopsy showed a large clot, the result of a cerebral hemorrhage.

DR. E. WYLLYS ANDREWS thought that spinal puncture would be a valuable aid in some of these cases. He had not tried it, but he believed it would furnish some information.

DR. ARCHIBALD CHURCH said that a sharp differentiation should be made between hemorrhagic pachymeningitis, which is commonly found in general paresis, and in some of the late stages of dementia, and the pachymeningitis or the cerebral hemorrhage which had been described by the essayist. He had had considerable experience with the variety of the disease found among the insane, and even there the diagnosis was exceedingly difficult. In his experience the salient point which stood out prominently was that in these cases there was almost invariably a history of protracted and habitual alcoholism, although in some of the cases the pathologic condition came on irrespective of alcoholism. He detailed two very interesting cases.

DR. JACOB FRANK spoke of having reported two cases before the society years ago. He emphasized the importance of distinguishing between alcoholic and traumatic pachymeningitis. In the traumatic cases the diagnosis was not very difficult, because if there was hemorrhage there was generally paralysis. In 1890 he stated and believed that, if a patient was brought into a hospital and no lesion was found, yet who manifested signs of meningeal hemorrhage or concussion of the brain, tapping of the ventricles would be good practice. He had seen patients on the operating table with contracted pupils, stertorous breathing, very slow pulse, who were relieved of all these symptoms by tapping the lateral ventricles. One of his patients recovered.

DR. MUNRO, in closing the discussion, expressed doubt as to whether spinal puncture would have any effect in such instances. In these cases the clots were firmly adherent, and it was necessary to clean them out with the finger or some blunt instrument, thereby relieving intraventricular pressure. He had tapped the ventricles in several cases, and he hardly opened any brain, especially where there was indication of pressure, that he did not tap the ventricles. This procedure relieved pressure on the brain; it was easily done, and was harmless. It cured a case once in a while that could not be cured in any other way.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Earache.

The following is recommended by Hecht in *Med. Rec.* to relieve earache:

℞. Acidi carbol. liq. ..... gr. v | 30
Cocainæ hydrochlor ..... |
Menthol, āā ..... gr. xv 1 |
Alcoholis ..... m. lxxv 5 |

M. Sig.: To be dropped into the ear.

Atrophic Rhinitis.

While there is but little hope of doing more than relieve the exceeding nauseating odor in this affection, yet if that can be lessened something will have been accomplished, as there is no other disease of the nose which will cause such a disagreeable and fetid discharge. The following combinations are recommended as antiseptics and to so cleanse the membranes as to temporarily do away with the odor:

℞. Acidi carbol. ..... gr. iii | 20
Sodii boratis ..... ℥ss 2 |
Sodii bicarb. ..... ℥i 4 |
Glycerini ..... ℥iss 3 |
Aquæ, q. s. ad ..... ℥iii 90 |

M. Sig.: To be used as a spray three or four times a day; or, according to Merck, the following is of service:

℞. Iodoformogen ..... ℥i 4 |
Bismuthi subnit. ..... ℥i 4 |
Sacch. lactis ..... ℥i 4 |

M. Sig.: Cleanse the nose thoroughly and use freely as a snuff several times a day.

Coakley recommends the following in the treatment of atrophic rhinitis:

℞. Menthol ..... gr. xx 1 | 30
Aristol ..... ℥ss 2 |
Benzoinol ..... ℥i 30 |

M. Sig.: To be used locally in an atomizer once or twice daily.

Treatment of Cough.

The following methods of treating cough are quoted in *Ther. Gazette:*

℞. Morph. hydrochloratis ..... gr. ii | 12
Aq. laurocerasi ..... ℥iiss 10 |

M. Sig.: Take from three to ten drops four to six times a day if necessary.

Another recommended by Rummo, in *Jour. des Pract.:*

℞. Morph. hydrochlor ..... |
Cocainæ hydrochlor, āā ..... gr. ii | 12
Atropinæ sulph. ..... gr. 1/100 | 0006
Aq. laurocerasi ..... ℥iiss 10 |

M. Sig.: Three to ten drops may be taken in the 24 hours, either in a little syrup or on a piece of sugar.

Heroin may be prescribed as follows:

℞. Heroin ..... gr. ¼-ss | 015-03
Sacch. albi ..... ℥i 4 |

M. Ft. capsulæ No. x. Sig: One capsule to be taken three or four times daily.

In cases where there is marked cardiac debility associated with the cough the following should be administered:

℞. Morph. hydrochlor. ..... gr. ii | 12
Sparteinæ sulph. ..... gr. vii | 45
Aquæ destil ..... ℥iii 12 |

M. Sig.: Ten or fifteen drops hypodermically at one dose.

In other instances the following pill may be ordered:

℞. Ext. opii (denarcotized) ..... gr. i | 06
Ext. cannabis indicæ ..... gr. ii | 12
Ext. stramonii ..... gr. i | 06

M. Ft. pilulæ No. iv. Sig.: One to be taken two or three times daily, if the cough is persistent.

Locally, the following combination may be applied:

℞. Cocainæ hydrochlor ..... gr. ii | 12
Chloralis hydratis ..... gr. xlv 3 |
Pot. bromidi ..... gr. xlv 3 |
Glycerini ..... ℥iss 45 |
Aq. destil ..... ℥x 300 |

M. Sig.: Put into an atomizer and spray the throat two or three times daily to relieve laryngeal cough.

Treatment of Cystitis.

G. Bjorkman, in *Merck's Archives,* recommends, in the treatment of acute and subacute cystitis, absolute rest in bed; all active, local interference in the acute stage is contraindicated. The first care should be to relieve the distress and support the bladder in its attempts at free and complete evacuation. This, according to the author, is best done by opiates in the form of suppositories and chloral and the bromids per os. The diet should consist of milk, soup and gruels. The bowels should be evacuated by means of saline cathartics. For vesical spasm and tenesmus, the following may be given in the form of suppositories:

℞. Ext. opii ..... gr. i | 06
Ext. hyoscyami ..... gr. i | 06
Ext. cannabis ind. ..... gr. iss | 09
Lupulini ..... gr. xv 1 |
Butyr. cacao, q. s. ..... |

M. Ft. suppos. No. i. Sig.: Insert one in the rectum as needed two or three times a day.

Internally, the following will be of service:

℞. Chloralis hydratis ..... |
Pot. bromidi, āā ..... ℥iss 6 |
Syr. aurantii ..... ℥i 30 |
Aq. destil, q. s. ad. ..... ℥iii 90 |

M. One tablespoonful every three or four hours.

As an urinary antiseptic the following:

℞. Formin or urotropin ..... gr. viii | 50

M. Ft. chart. No. i. Sig.: Take one powder in a glass of water before each meal.

If the urine should be hyperacid a little potassium citrate or acetate should be added to the water; if too alkaline a few drops of mineral acid may be added. In cases of subacute cystitis irrigation may be carried out, using the following solutions:

℞. Argenti nitratis ..... gr. iss-iiss | 09-15
Aq. destil., q. s. ad. ..... ℥iii 90 |

M. Sig.: One-half the amount to be used lukewarm, as an irrigation; or:

℞. Argentamini ..... gr. xv 1 |
Aq. destil. ..... Oii 1000 |

M. Sig.: One or two ounces to be used in the form of an irrigation once or twice a day after the acute symptoms have ceased.

Solutions for Douches.

Wingrave in *London Lancet*, according to an abstract in *Ther. Gazette*, states that while disclaiming any intention of suggesting a universal irrigant, clinical observation has shown that the neutral salts, especially sodium sulphate, is by far the most reliable basis for an irrigant, especially when pus predominates, but the addition of an alkaline salt will render it more effective. The following formulæ have been used chiefly in connection with diseases of the ear and upper air passages, and are equally applicable to surgery:

℞ Sodii sulph. ..... ℥iss-℥iii 6-12
Aq. destil ..... Oi 500

M. Sig.: To be used in irrigation as a simple irrigant for pus; or:

℞ Sodii sulph. ..... ℥iss-℥iii 6-12
Sodii bicarb. ..... gr. xl 2 | 65
Aquæ destil. ..... Oi 500

M. Sig.: To be used as an irrigant for mucus or inspissated discharge; or:

℞ Sodii sulph. ..... ℥iss-℥iii 6-12
Sodii boratis ..... gr. xl 2 | 65
Aq. destil. ..... Oi 500

M. Sig.: To be used when mucus is present.

℞ Sodii sulph. ..... ℥iss-℥iii 6-12
Sodii bicarb. ..... gr. xl 2 | 65
Glycerini acidi carbol. ..... gr. xlv 3
Aquæ ..... Oi 500

M. Sig.: For irrigation in cases of fetid mucus. In this prescription absolute phenol (gr. ix) may be used.

℞ Sodii boratis ..... gr. xl 2 | 65
Sodii bicarb. ..... gr. xl 2 | 65
Glycerini acidi carbol. ..... gtt. xlv 3
Aquæ ..... Oi 500

M. Sig.: As an irrigation in cases of mucus and crusts.

℞ Sodii sulph. ..... ℥iss 6
Pot. permanganatis ..... gr. ii | 12
Aq., q. s. ad. ..... Oi 500

M. Sig.: To be used as a deodorant.

℞ Sol. calcii chloridi ..... ℥vi 24
Aquæ ..... Oi 500

M. Sig.: To be used when a hemostatic is indicated.

It should be noted, in making up the foregoing combinations, that the exsiccated sodium sulphate should be used in preference to the crystalline salt and the bicarbonate of soda is preferable to the carbonate.

Inhalation in Tuberculosis.

The following, according to H. E. Lewis in *N. Y. Med. Jour.*, is valuable as an inhalation in cases of mixed infection with marked purulent expectoration, for allaying laryngeal irritation and cough:

℞ Tinct. iodi co. ..... ℥iv 16
Tinct. tolutani ..... ℥ss 15
Tinct. cinnamomii ..... ℥i 4
Acidi carbol. ..... ℥i 4
Spts. chloroformi ..... ℥i 4
Alcoholis, q. s. ad. ..... ℥iv 120

M. Sig.: To be used in a bottle with large cork, through which two glass tubes are run. Inhale through the shorter tube which does not touch the liquid.

Dyspepsia.

The following, according to the *N. Y. Med. Jour.*, is Dujardin-Beaumetz's treatment of dyspepsia:

1. When the gastric disturbance is due to oversecretion of gastric juice the diet should consist of eggs, farinaceous preparations, vegetables and fruit. The eggs should be soft-boiled, especially the yelks; the farinaceous food should be taken in the form of soups—as potato, turnip, lentil, wheat, oatmeal, barley and macaroni—all of these, of course, to be rendered as thin as possible. The vegetables should be thoroughly cooked and taken in the form of vegetable soup or soup made of small peas well boiled; the same holds good for spinach and turnip. All fruits, avoiding raisins, should be used in the form of jelly. The bread should be well baked or toasted. As a drink, wine mixed with water, light beer or milk mixed with alkaline waters may be used.

2. When the dyspepsia is due to deficient secretion of gastric juice the diet should be made up of peptonized substances, toasted bread, bouillon, mixtures of broths and milk, powdered meats, scraped meats, pepsin and lemonades with hydrochloric acid made as follows:

℞ Acidi hydrochlor. dil ..... ℥ii 8
Aquæ, q. s. ad ..... Oi 500

M. Sig.: One glassful after each meal.

3. In dyspepsia due to sympathetic troubles, the diet should be purely vegetable.

Modification of Breast Milk by Diet and Hygiene.

T. S. Southworth's article in THE JOURNAL A. M. A., August 2, is worth additional emphasis. He states that modification of the breast milk may be accomplished by means of diet and hygiene. The infant, according to the author, should not be taken away from the breast if it can be avoided. The mother should avoid all unsuitable food. She should take rational exercise, avoid the use of tea and eat only plain food and avoid all stimulating drinks. If necessary one or two feedings, from the bottle, of sterilized cow's milk may be substituted in order to give the mother more time for exercise and recreation.

Picric Acid in Treatment of Gonorrhea.

H. de Brun, in *Rev. Gen. de Clinique de Ther.*, recommends injections of picric acid in the strength of 1 to 200 solution. He states that the injections in this strength are practically painless, and when used in strength of 1 to 100 they may cause pain, but the injections are never intolerable. He states that these injections should be given two or three times daily and retained each time for about three minutes. If much pain is produced by these injections they may be reduced to one a day. A cure of acute gonorrhea is produced, according to his statement, in from four to five days. The discharge changes to a much clearer color and loses its purulence after the first injection. He also recommends it as a very efficient agent in the treatment of chronic gonorrhea.

Medicolegal.

Disorders that Do Not Break Warranty of Good Health.—The Supreme Court of Alabama remarks, in passing, in Mutual Benefit Life Insurance Company vs. Lehman, that forfeitures of policies of insurance by reason of the inaccuracy or falsity of answers to questions, even when properly made warranties, is not favored in the law, since the operation of such warranties may be, and frequently is, to defeat the policy, though neither its issuance nor the death of the assured may bear any relation to the fact concealed or inaccurately or falsely affirmed; and on this and other considerations such warranties are strictly construed against the insurer, and liberally to the upholding of his liability under the policy. Hence it is held that a warranty arising on questions and answers incorporated by reference or bodily into the policy may be broken in the letter without vitiating the contract, but that the breach, to that end, must be of the spirit, intent, and substance of the covenant, as, for example, where the warranty is that the applicant is in good health, the intention is, not that he is in perfect health, but that he is free from ailments calculated or tending to shorten life and increase the insurer's risk. And the court apprehends that a warranty that the applicant has no disease or disorders would not be breached by the fact that he did have a disease or disorder temporary in its nature, and involving no tendency to shorten life. Thus, it says, one may, at the time of answers made, have an acute disorder of the kidneys, due to some specific and known cause, and eradicable both as to cause and condition, so as to leave no impairment of health; or he may have a temporary dyspepsia, yielding to treatment, and not affecting the risk; and surely he may have headaches and muscular pains, none of which would be a disorder within the sense and substance of the warranty, but each of which would be a disorder within its letter.

Skill Required—Not Discovering Septicemia—Evidence.—The legal obligation of the physician to his patient, where his

conduct is questioned in an action for malpractice, the Supreme Court of Minnesota says, on the third appearance before it of the case of Martin vs. Courtney, demands of him no more than the exercise of such reasonable care and skill as is usually given by physicians or surgeons in good standing of the same school of practice. To exact more than this would be an unjust imposition on the physician, to encourage expectations of miraculous power that could not be fulfilled, for he is not an insurer of absolute success. The white headstones and monuments that glisten in the sunshine within the sacred precincts devoted to the repose of the dead in the suburbs of every city and hamlet in the land testify with unerring certainty that man is mortal, and the most effective efforts of the healing art are incapable of resisting the conqueror of all. The very best results of science recognize this truth. The medical art of late years has made great advances in resisting the ravages of disease, but it has its limitations, and its achievements are still but an approximation to its highest ideals. It is perhaps unfortunate for the profession that too much is expected from it. Confidence in the physician by the patient is essential, but it should not be such an unwavering faith in his powers as the superstitious savage gives to his medicine man, or makes success the sole metewand of duty, but rather a sensible and intelligent trust that expects reasonable efforts, and, when these have been bestowed, submits with Christian resignation to the inevitable, for "he censures God who quarrels with the imperfections of man." The ubiquitous protectorate which jurisprudence extends to all material interests and to every science and to every art takes note of our common fate, with the possibilities of failure in the professional treatment of disease, and accords the medical practitioner in every case the presumption that he has done his whole duty, which imposes on those who challenge his conduct in the courts the burden of establishing his negligence. In this case the unfortunate termination of the patient's illness was without doubt attributable to septicemia, the germs of which had existed in his system for some length of time before they were discovered; and the issue at the trial was whether the physician, by the exercise of reasonable care, could have discovered the existence of septicemia from the effusions of poisonous pus from the wound, and by closing it up, although to secure the more rapid healing of the stump, he was guilty of malpractice. The patient's wife testified that within four or five days after he was taken to the hospital where he was treated purulent discharges of a poisonous character issued from the wound, and continued to exude therefrom until his death. An expert witness, having the proper qualifications, who was presented to sustain her theory, and who, basing his opinion on her testimony and other evidence to the effect that pus continued to exude from the wound from the beginning until the end, stated that the closing up of the wound was improper, admitted that on the conceded facts such a discharge of pus would be unusual. He further stated that there was a healthy discharge from all wounds that might be easily mistaken by the nonprofessional observer for the poisonous discharge indicative of septicemia, and that the discharge characterized by the wife as pus would be accompanied by certain other evidences of septicemia, which for several months during the treatment concededly did not exist in this case. Now, leaving out of consideration any other evidence than that of the wife and her own expert, the court, which holds that there was no error in directing a verdict for the physician, declares that it can not say that the testimony reasonably tended to support the view that the emissions from the wound were poisonous, or appeared to be of a sufficiently dangerous nature to have required the physician to stop his efforts to heal the wound, and devote his attention solely to a better drainage for fear of blood poisoning. Neither can it hold that the jury had a right to say that a different course should have been adopted on a supposition that the wife's characterizations of the wound discharges were accurate where a nonprofessional judgment would be wholly insufficient for that purpose. In such cases a nonprofessional observer is not to be permitted to diagnose disease, nor define its symptoms, as the basis of judgment. The professional assistance of the physician is sought on the assumption that he has superior knowledge, derived from his art, over a nonprofessional person; otherwise why call him? To this the patient submits himself. Hence the knowledge of the physician must also necessarily be distinguished from the knowledge or judgment of the ordinary layman, and constitute the standard by which any course of medical treatment is to be measured and determined.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below

American Medicine (Philadelphia), October 4,

1 *The Pathologic Relations of the White Blood-Corpuscles; A Case of Hodgkin's Disease of Tuberculous Origin; a Case of Lymphatic Leukemia. O. T. Osborne.
2 *Extirpation of the Gall-Bladder Through the Lumbar Incision, with Report of a Case. W. P. Manton.
3 Old Compound Partial Outward Dislocation of the Elbow and Resection. Martin B. Tinker.
4 *Medical Treatment of Pulmonary Tuberculosis. Jesse Shoup.
5 *An Analysis of Fifty-five Cases of Diphtheria. Henry G. Godfrey.
6 *The Rectal Approach in Obstetrics. W. A. Briggs.
7 A Study of the Bacterial Flora of the Intestinal Mucosa of the Normal Rabbit. Marguerite J. Bullard.
8 The Ward Clinic. James B. Herrick.
9 Medical Practice in Cairo and Prevailing Diseases of Egypt. Nicholas Senn.
10 A New Suture for Securing Fixation of the Kidney. A. H. Goelet.

Medical News (N. Y.), October 4,

11 *Wandering Kidney, and the Results of Operation. Clarence A. McWilliams.
12 *The Nervous Manifestations of Movable Kidney. A. L. Benedict.
13 *The Modern Treatment of More Common Traumatic Injuries of the Eye. Charles J. Kipp.
14 Success in Practice. Charles E. Nammack.
15 *Sterility in the Female and Its Curability. S. L. Kistler.
16 A Case of Chronic Lymphatic Leukemia Accompanied by Lymphosarcoma or Myeloma of the Sternum and Ribs. Charles F. Craig.

Philadelphia Medical Journal, October 4.

17 Address in Obstetrics, Medical Society of the State of Pennsylvania. J. M. Baldy.
18 *A Modification of the Barker Method for the Treatment of Fractures of the Patella, with Illustrations. H. T. Williams.
19 *Notes on the Treatment of Colles' Fracture. J. P. Fiske.
20 Fractures of the Extremities. G. G. Ross and M. I. Wilbert.

Medical Record (N. Y.), October 4,

21 *The Post-Operative History of Fifty Cases of Simple Chronic Glaucoma. Charles S. Bull.
22 Medical Reciprocity, or Interstate Exchange of Licensures. B. D. Harison.
23 *Epidemic Poliomyelitis, with a Report of Ten Cases. D. H. MacKenzie.
24 *Discussion of the Report on Yellow Fever on the U. S. Ship *Plymouth* in 1878 and 1879. W. C. Gorgas.
25 Some Clinical and Operative Phases of Appendicitis. A. H. Cordier.
26 *Traumatic Injuries of the Liver. J. L. Wiggins.

New York Medical Journal, October 4.

27 *Rotation in Lateral Curvature: A Reply to Dr. Judson. Robert W. Lovett.
28 *A Method of Circumcision. Walter C. Klotz.
29 A Case of Cheloid. H. Taylor.
30 Complications in the Passage of a Gall-Stone. (Concluded.) Neil MacPhatter.
31 *Current Differentiation, Illustrated by a Case of Peripheral Neuritis, due to Parenchymatous Degeneration of the Cord. A. D. Rockwell.
32 *Further Remarks on Insufficientia Pylori as a Sequela of Chronic Gastritis; with Report of Fourteen More Cases, Treated Successfully. Mark I. Knapp.
33 Beatson's Cure of "Inoperable" Cases of Mammary Cancer. Jennie G. Drennan.
34 Mastoid Disease in Infants, Two Cases; in Adults, Two Cases; the Latter Complicated with Erysipelas. W. Peyre Porcher.

Boston Medical and Surgical Journal, October 2.

35 *Contagious Conjunctivitis. Myles Standish.
36 *The Simplification of the Treatment of Lateral Curvature. E. H. Bradford.
37 Sensory Hallucination and Its Analogues. (To be continued.) Robert MacDougall.
38 A Case of Transplantation of the Biceps Femoris Tendon. Charles F. Painter.

Cincinnati Lancet-Clinic, October 4.

39 The Present Status of Brain Surgery. H. J. Whitacre.
40 Ups and Downs of a Physician's Life. (Continued.) George J. Monroe.

Pediatrics (N. Y.), September 15.

41 *The Therapeutic Value of the Internal Use of Carbolic Acid. S. Henry Dessau.
42 A Case of Meningitis. Hugh N. Leavell.
43 Child Labor. P. F. Barbour.

Medical Fortnightly (St. Louis), September 25.

44 Diagnosis of Cancer of the Breast. Alfred Roulet.
45 A Demonstration of Some Pathologic Specimens Illustrating the Various Diseases of Infancy and Childhood. I. A. Abt.
46 Diseases of the Lungs and Pleura. Albert Abrams.

Medical Age (Detroit, Mich.), September 25.

47 *Dislocation of the Hip During Normal Labor. L. B. Newton.
48 The Gall-Bladder. J. Lively Johnson.
49 *Shall We Make Our Consumptives Social Outcasts? J. Howe Adams.

Archives of Ophthalmology (New Rochelle, N. Y.), July.

50 *Primary Sarcoma of the Iris. Casey A. Wood and Brown Pusey.
51 *A Case of Traumatic Enophthalmos. H. W. Kilburn.
52 Two Noteworthy Cases of Extraction of Iron from the Vitreous Chamber by Means of the Giant Magnet. A New Procedure. Charles J. Kipp.
53 A Case of Blennorrhea of the Lachrymal Sac Caused by the Presence of a Rhinolith. Charles J. Kipp.
54 A Case of Streptothrix in the Lower Canaliculus. Charles J. Kipp.

September.

55 A Case of Metastatic Carcinoma of One Optic Nerve, with Peculiar Degenerations of Both Nerves. Ward A. Holden.
56 *The Purely Anatomical Proof of the Existence of Uncrossed Optic-Nerve Fibers in Man. Prof. St. Bernheimer.
57 A Case of Abnormal Tortuousness of the Retinal Vessels. Hugo Levin.
58 On the Histology of the Scars Following Posterior Sclerotomy. J. Meller.
59 *The Rôle of Scleral Scars in Operations for Glaucoma. N. Andogsky and P. Selensky.
60 *Acuteness of Vision and Astigmatism. Adolf Steiger.
61 Endarteritis Obliterans Arteriæ Centralis Retinæ Diffusa. J. Markow.
62 *Treatment of Corneal Infiltrations by Iodine-Vasogen. Alexander Duane.
63 Albuminuric Retinitis in Syphilis. C. Zimmermann.

University of Pennsylvania Medical Bulletin (Philadelphia), October.

64 A Scheme for Taking Histories, Conducting Examinations, Recording, Filing and Indexing All the Data Observed in the Management and Treatment of Surgical Affections. Montgomery H. Biggs.

Colorado Medical Journal (Denver), July.

65 Medical Legislation. S. D. Van Meter.
66 Granular Ulcer of the Cervix Uteri. Clarence L. Wheaton.
67 Recovery of a Needle Which Had Entered Patient's Body Many Years Before. A. Mansfeld Holmes.

Archives of Pediatrics (N. Y.), September.

68 Report of a Case of Extreme Enlargement of the Spleen with Anemia. Samuel McC. Hamill.
69 *Some Remote Diseases Arising from Tonsillar Infection. F. Forchheimer.
70 *Conclusions as to the Treatment of Tuberculous Peritonitis in Children. Thomas M. Rotch.
71 Two Cases of Umbilical Fistulæ Due to Tuberculous Peritonitis. George N. Acker.
72 Typhoidal Appendicitis in Children. A. Seibert.

Canada Lancet (Toronto), October.

73 *Presidential Address, Canadian Medical Association. Francis J. Shepherd.
74 Address in Surgery to the Canadian Medical Association. John Stewart.
75 *Chauvinism in Medicine. William Osler.

Annals of Gynecology and Pediatry (Boston), September.

76 *Operation for Recurrence of Cancer After Hysterectomy. E. W. Cushing.
77 Lazarus Riverius, 1589-1655. (To be concluded.) Ira J. Prouty.
78 Ophthalmia Neonatorum. I. L. Firebaugh.

Medical Sentinel (Portland, Ore.), September.

79 Infected Wounds. W. T. Phy.
80 A Rudimentary Uterus from a Clinical Standpoint. L. T. Brock.
81 Treatment of Appendicitis. Park W. Willis.
82 Some of the Curable Forms of Insanity. Robert L. Gillespie.
83 Ovarian Cysts Complicating Pregnancy—A Report of Three Cases. W. V. Kingsbury.

American Journal of Obstetrics (N. Y.), September.

84 Two Cases of Deciduoma Malignum. Charles P. Noble.
85 *Spinal Anesthesia. Samuel L. Weber.
86 *Mammary Substance in Uterine Fibroids. H. W. Crouse.
87 A Dicephalic Monster Obstructing Labor. G. M. Boyd.
88 *Puerperal and Gestational Paralyses. Charles J. Aldrich.
89 *What Are the Known Facts About Follicular Cystic Degeneration of the Ovaries? A. Goldspohn.
90 Fetal Mortality in Induced Labor. Warren R. Gilman.

Canadian Journal of Medicine and Surgery (Toronto), October.

91 The Social Phase of Smallpox and Vaccination. P. H. Bryce.
92 Smallpox—A Brief Clinical Description of 1500 Cases. Charles A. Hodgetts.

Fort Wayne Medical Journal-Magazine, September.

93 Very Dangerous Symptoms Following a Tarantula Bite. J. S. Boyers.
94 The Treatment of Chronic Parenchymatous Prostatitis. Joseph R. Eastman.

Chicago Medical Recorder, September 15.

95 *The Classification of Cirrhosis of the Liver. Arthur R. Edwards.
96 An Operation for Stricture of the Rectum in Women. Thomas J. Watkins.
97 *Cirrhosis of the Liver in Infancy and Childhood. Frank X. Walls.
98 *Pericarditic Pseudocirrhosis of the Liver. James B. Herrick.
99 Cases of Pleurisy with More or Less Permanent Pneumonic Induration—Are They Tuberculous? Robert H. Babcock.
100 Arthritis Deformans in a Child, with Several Lymph Gland Enlargements and Splenic Tumor. A. F. Lemke.

Clinical Review (Chicago), October.

101 The Leading Chemical Causes of Gastro-intestinal Catarrh. N. H. Adams.
102 The Course and Ordinary Care of Acute Intestinal Catarrh. S. R. Slaymaker.
103 Surgical Cases (Pyosalpinx, etc.) Raymond C. Turck.
104 Eye-strain Headache. J. Elliott Colburn.
105 Clinical Lectures upon the Etiology, Pathology, Diagnosis and Treatment of Tumors. A. H. Levings.
106 Tuberculosis of the Joints. A. J. Ochsner.

St. Paul Medical Journal, October.

107 *Fractures of Patella, with Special Reference to Their Treatment by Suture. Walter Courtney.
108 *Can We by Modern Methods Anticipate Impending Attacks of Puerperal Eclampsia? J. L. Rothrock.
109 *The Position of the Uterus. Byron Robinson.
110 *The Requirements of Sanitation. H. M. Bracken.
111 Some Clinical Features of Epileptoid Conditions. A. C. Rogers.
112 *Intestinal Anastomosis: Comparative Merits; with Report of Three Unpublished Cases. Archibald MacLaren.

Albany Medical Annals, October.

113 The Insane in New York State. Robert M. Elliott.
114 Gonorrheal Prostatitis, Acute and Chronic; Etiology, Pathology and Treatment. James W. Wiltse.
115 The Influence of the Discovery of the Relation of Bacteria to Disease on the Practice of Medicine Exclusive of Surgery. (Continued.) H. Judson Lipes.

Kansas City Medical Record, September.

116 *The Results of the Experiments and Discoveries of Professors Loeb and Matthews Examined. Jos. Clements.
117 *The Operative Treatment of High Myopia. J. W. Sherer.

Pacific Medical Journal (San Francisco), September.

118 The Vaccination of Porto Rico—A Lesson to the World. Azel Ames.
119 Epilepsy. W. Tourn.

New Orleans Medical and Surgical Journal, October.

120 The Medical Society and Its Relation to the Medical Profession. T. E. Schumpert.
121 The Transmission of Tuberculosis. Whyte G. Owen.
122 The Education of the People as a Factor in the Prevention of Tuberculosis. F. M. Thornhill.
123 Tuberculosis Among Our Negroes in Louisiana. J. M. Barrier.
124 Vital Statistics of Tuberculosis in Louisiana. G. Farrar Patton.

Alabama Medical Journal (Birmingham), September.

125 The Importance of the Early Diagnosis of Hip Disease. Wm. T. Berry.
126 Ectopic Gestation. Wyatt Heflin.
127 To What Extent Should Physicians Supervise the Education of Our Boys and Girls, with Special Reference to College Work? D. L. Wilkinson.
128 Inflammatory Conditions of the Vermiform Appendix, with Report of Cases. W. T. Henderson.
129 A Case of Coexisting Intra- and Extra-Uterine Pregnancy, One Fetus Expelled at Third Month, the Other Removed by Operation Three Months Later. Harry T. Inge.
130 Atresia of the Vagina. W. H. Blake.

Medical Mirror (St. Louis), September.

131 Fibroid Tumor of the Uterus: Operation. Suppurative Salpingitis and Peritonitis (Pelvic Abscess): Operation. Lewis S. McMurtry.

Texas Medical News (Austin), September.

132 Epilepsy. J. R. Nichols.
133 Medical Nomenclature. S. A. Lowrie.
134 The Prevention of Tuberculosis. R. W. Baird.
135 Congenital Absence of Rectum. Colostomy. E. A. Malsch.

Southern California Practitioner (Los Angeles), September.

136 The British Medical Association. Andrew S. Lobingier.
137 A Study of the Diagnosis of Incipient Pulmonary Tuberculosis. (To be continued.) F. M. Pottenger.
138 The Climate of the Eastern Foothills of Southern California. C. A. Sanborn.

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1. **The White Blood Corpuscles.**—Osborne describes the conditions of the white blood corpuscles in pathologic states, and reports a case of lymphatic leukemia, which he considers of interest. He concludes his paper by saying: "1. The lymphocytes are probably not the origin of the polynuclear leucocytes, else with so many lymphocytes we ought to have an increase of the more mature cells. 2. Normally, without medication to cause it, in lymphatic leukemia, as has been observed by others as well as ourselves, the uric acid and phosphorus output is not increased, hence these cells do not break down more rapidly than in normal individuals with only 8000 or so leucocytes. This means that a normal person with from 5000 to 8000 leucocytes has no more nuclear breakdown than these

patients with nearly 40,000 leucocytes. 3. Arsenic, alkalies and nucleic acid reduced the size of the glands and spleen in this case, but caused destruction of red corpuscles. 4. Nucleic acid alone seemed to reduce positively the number of the white cells. 5. The red cells and the general condition always and consistently improved under Armour's red bone-marrow. Hence it is justifiable to assume that in this case, if not in all cases of lymphatic leukemia, the bone-marrow is diseased. 6. The malarial infection reduced the number of the white cells and the size of the glands more than any treatment instituted."

2.—See abstract in THE JOURNAL of September 27, p. 791.

4. **Pulmonary Tuberculosis.**—The drugs which we use in pulmonary tuberculosis are stated by Shoup as follows: 1. Those that promote healthy metamorphosis; 2, those that are bactericidal and being eliminated by the lungs come nearest to checking the disease *in situ;* 3, that class of drugs which stimulate phagocytosis. In the first class he includes arsenic, strychnin, phosphorus and vegetable tonics, noticing also the special properties of the cacodylates and phosphorus in the form of phospho-albumin, nucleins, etc. Strychnin is also a respiratory, heart and nerve stimulant and should be given freely, as well as various bitter and vegetable tonics. Of the second class of drugs creosote may be taken as a type. He has had good results with it where it did not interfere with digestion. When administered in other ways than by the mouth it is much less efficient. While laboratory experiments do not seem to indicate that creosote can have any destructive effects on the bacilli, clinical results seem to show that it may do this. Guaiacol, which has succeeded creosote on account of its being less disagreeable, is preferred where gastric symptoms are prominent and should be given as creosote is given, in large doses. Shoup has used thiocol, but found it in no way superior. He has used ichthyol, but discontinued it on account of the disagreeable eructations and vomiting, though others have good results with it. Other drugs that have been employed are methylene blue, formaldehyde, iodin and its compounds, etc. The third group of medicines include the serums and other drugs such as cinnamic acid, given chiefly to stimulate and multiply the leucocytes. He has employed lately cinnamic acid in combination with arsenic and opium, with apparently good results. Harper's theory of the effect of urea is mentioned and Shoup is experimenting on the subject, but it is as yet too early to give results. Serum treatment has not yet met expectations, but he holds we have in it a useful adjuvant when used with other remedies. His own experience agrees with those who claim that patients improve oftenest when treated with the serum, together with other treatment. As regards special symptoms he mentions strychnin, hydrochloric acid, menthol, thymol, etc., for the gastric and intestinal symptoms; cold baths for the fever; codein for the cough and for diarrhea a guarded diet, papein or pepsin with guaiacol carbonate and bismuth subnitrate or tannalbin or tannagen or iodomuth with opium. In the extreme cases of insomnia he has had excellent results from hyoscin hydrobromate. He thinks the patient who can not avail himself of a climatic change should be seen every day and watched, and treatment employed according to conditions.

5. **Diphtheria.**—Godfrey gives an analysis of 55 cases all treated with concentrated antitoxin in doses of 2000 units or more. The average dose was 4500 units. He notices also the persistence of diphtheria bacillus in the throat in a number of cases from ten to thirty-seven days, averaging thirteen days. He remarks as regards the use of antitoxin that it is not depressing to the heart. In 18 of the cases irregularities or intermissions of the pulse were noted. Only slight untoward effects of antitoxin were noted in arthropathies of knee and hip in 2 cases, urticarious rashes in 8. All these occurred between the eighth and eleventh day and were of short duration. The amount of antitoxin used did not seem to produce any serious anemia, and in fact the anemia was less with the larger doses than with the smaller ones.

6. **Rectal Approach in Obstetrics.**—Briggs claims that he has had good results from operating through the rectum to dilate the cervix in delayed labor, also in delayed rotation or in correcting the imperfect flexion or delayed extension by this method.

11. **Wandering Kidney.**—The paper of McWilliams is too elaborate and detailed for abstracting. He gives, however, at the close the following résumé of the Presbyterian Hospital (N. Y.) statistics of movable kidney: "Total, 61 cases: 2 occurred in men; 59, or 96.7 per cent., in women; 38, or 64.4 per cent., were married women; 21, or 35.6 per cent., were single women. Of the married women, 22, or 37.2 per cent. of the whole 59, had borne children. Average number of children to each, 2. Right kidney movable in 53 cases, or 86.8 per cent. Left kidney movable in 4 cases, or 6.6 per cent. Both kidneys movable in 4 cases, or 6.6 per cent. Average was 33 1/3 years; youngest, 17; oldest, 65 years. Trauma antecedent in only 7 cases, or 11.4 per cent. Complications: Femoral hernia in 2. Gastro-intestinal indigestion in 25. Marked constipation in 28; diarrhea in 3. Jaundice in 1. Chronic appendicitis in 9. Urinary symptoms in 18. Renal colic in 7. Renal calculus in 1. Pyelitis in 1. Chronic nephritis in 2. Neurasthenia in 11. General enteroptosis in 3. Uterine abnormalities in 5. Results of operation: Forty-two cases followed after operation showed 22, or 52.3 per cent., cured of subjective symptoms; 15, or 35.7 per cent., benefited; 5, or 10.9 per cent., no benefit. Uncomplicated: Nineteen cases, or 31.1 per cent., of the whole 61. Of these 12, or 63.1 per cent., were cured. Complicated: Twenty-three cases, or 34.4 per cent. of the whole 61. Of these, 10, or 43.4 per cent., were cured. Recurrence occurred in 6 cases out of 36 examined, or 16.6 per cent. Mortality of operation: Two cases in 61 operations, or 3.2 per cent."

12. **Nervous Manifestations of Movable Kidney.**—From a study of the patients in the Buffalo Hospital of the Sisters of Charity, Benedict has noticed in a number of cases a more or less disordered nervous system, which he considers not as the results of the first degree of kidney lesion alone, but would rather suggest that the causal relation was reversed. The cases include mania, melancholia, suicidal tendencies, nervous prostration, etc.

13. **Injuries of the Eye.**—The various classes of injuries of the eye are reviewed in detail by Kipp, who insists on the importance of antisepsis in their management and thorough examination. The paper is too detailed for abstract in the space here given. In conclusion he remarks that injuries of the eye are not infrequently the cause of litigation. It is of importance that the surgeon who first sees the case should not only make a thorough examination of the injured eye, but also ascertain the exact condition of the non-injured one at the time, noting the exact amount of vision in each when examined separately, and all peculiarities he may observe in the non-injured eye, as defects in this eye may subsequently be attributed to the injury of the other eye.

15. **Sterility in the Female.**—The causes of sterility are enumerated by Kistler as follows: "1. I believe that many causes of this condition, as well as of uterine disease in general, are the result of loss of sympathetic nerve force, the effect of disease, or injury arising from sexual demands. 2. An indefinite number of cases are undoubtedly the result of imperfect participation of the uterus in the sexual orgasm, and the consequent lessened respiratory action of the uterus. 3. Inactive ovaries. 4. Inactive condition of uterine mucosa. 5. Congenital deficiencies, anomalies of the hymen and malformation of the congenital tract. 6. Arrested development of ovaries and tubes. 7. Excessive acid reaction of secretion of vaginal mucus membrane and catarrhal changes in the mucus membrane of the uterus and tubes. 8. Vaginismus; neurastheniæ; exhaustion; physical decadence; nymphomania. 9. Amenorrhea; dysmenorrhea; narrow internal and external os. 10. Flexions; versions. 11. Laceration of cervix; profuse leucorrhea; endometritis. 12. Gonorrhea, especially with involvement of adnexa. 13. Constitutional diseases and conditions. 14. Neoplasms; myomas; malignant growths; hypertrophy. 15. Ingestion of certain articles of diet and medicines. 16. Obesity. 17. Incompatibility. 18. Higher education." He sums up his conclusions in the following: "1. The great major-

ity of cases of sterility are dependent upon slight causes. 2. The greater number of cases are curable. 3. Many apparently hopeless cases are curable. 4. Length of time a case has persisted is no bar to treatment, providing organic change has not obtained which precludes possibility of cure. 5. Treatment used must always depend upon the case in hand."

18. **Fractures of the Patella.**—Williams describes his method of performing subcutaneous suture of the fractured patella which varies from the Barker method by the use of a double ligature. In introducing the needle it can be passed either way from above downward or from below upward. In introducing the ligature he threads it double into the eye of the needle after the needle has appeared at the opposite incision from which it is introduced. Then holding the two ends of the ligature outside of the skin, he withdraws it enough to bring it, with the loop, just beyond the opposite side of the fragments of the patella. Then without withdrawing it from the wound, he passes it above the fragments and brings it out through the incision at its first point of exit. The loop is then unthreaded from the eye of the needle and the needle withdrawn. In this manner the ligature is doubled around the fragments. By not completely withdrawing the needle before it is passed above the patella, it prevents the skin or the subcutaneous tissue from being caught in the ligature as is apt to be the case with the Barker method. After the needle is withdrawn, one end of the ligature is passed through the loop and after pulling both ends tightly they are tied firmly, thus making what is known as the Staffordshire knot. A little manipulation over the seat of the fracture as the ligature is being tied, arranges the fragments in their proper position. The ends of the ligature are cut off and the small incisions above and below the patella are closed with one or two catgut sutures, the parts dressed antiseptically and the limb put in the anterior and posterior splint. He claims as the advantages of this method, the double ligature, the prevention of integument or subcutaneous tissue being caught between the ligature and fragments, and by using the Staffordshire knot the ligature can be more tightly drawn and the fragments held more closely together. He has applied this method in two cases with very satisfactory results.

19. **Colles' Fracture.**—The common errors in the treatment of Colles' fracture, according to Fiske, are failure to use an anesthetic, failure to place the hand in ulnar flexion, failure to employ massage, and failure to emply the hot-air box with a temperature of 250 to 350 F., especially in patients over 40 years of age, and too early attempts to break up adhesions about the joint and tendons by wrenching. He remarks that fractures of the lower end of the radius are seldom simple affairs of the bone, but are usually complicated with injury of the soft parts and adjacent joint. It is not merely a bony lesion requiring simple flexion after rotation, but there are other injuries requiring protection and massage. The dressing should be changed as the edema subsides, and a removable fixation apparatus, preferably two light plaster-of-Paris shells, should be employed. Only in those cases where there is a tendency for the fragments to slip, should the splint be kept on for a considerable time, a period sufficiently long for the fragments to become united, usually ten days. We may employ two lateral splints of light wood, properly padded, applied with the forearm semiflexed and in semipronation, or else a light plaster-of-Paris cast. The latter requires considerable skill and trouble. The fixation apparatus should at first extend downward to the distal end of the metacarpals, the fingers having free play. As the case progresses the splint must be removed for inspection, for massage and for the application of dry heat.

21. **Glaucoma.**—Fifty cases are analyzed by Bull, all operated on by iridectomy, which was done on one eye alone in 6 cases; in both eyes at varying intervals of time, in 31 cases; and in both eyes simultaneously in 13 cases. From a careful study Bull concludes "where the disease undoubtedly exists in both eyes of a patient better results as to visual acuity and the field of vision are obtained by a simultaneous operation on the two eyes. The operative effect of iridectomy is more certain and undeniable, the earlier it is done. The slightest narrowing of the field, whether for form or color, demands operation, once our diagnosis is made. The curative action of iridectomy stands in direct proportion to the increase of tension. Early iridectomy, while the iris is still mobile, the field but little contracted, and the cupping of the disc slight, very often arrests the disease, at least for a long period, and preserves what sight remains. *Done early*, it offers the best prospects for the arrest of the process, and its effects are either permanent or very prolonged."

23. **Epidemic Poliomyelitis.**—MacKenzie reports an outbreak occurring in two towns in Dutchess County, New York; 17 cases with 7 deaths, or a mortality of over 41 per cent. Most of the cases were those of adults. In two of the fatal ones the diagnosis of Landry's paralysis was made and only two out of the whole number presented the classical symptoms of poliomyelitis.

24. **Yellow Fever.**—Gorgas answers the objections as to the historical instance of the recurrence of yellow fever on the United States Steamer *Plymouth*, after having been wintered in the north, by assuming that the stegomyia mosquitoes hibernated on board the vessel and it, therefore, became reinfected. He gives letters from Drs. Finlay and Guiteras, well known as experts on the disease, in which they recognize this possibility.

26. **Injuries of the Liver.**—Wiggins reports a case of liver rupture from traumatism causing considerable loss of hepatic substance, the patient nearly moribund. The treatment consisted in suturing the wound with catgut, cleansing the abdomen, and closing the wound without drainage, but later establishing drainage by resection of the ribs. The result was good. His conclusions are given as follows: "1. Delayed bloody vomit or stool in obscure abdominal injuries, is indicative of rupture of hepatic substance without laceration of its fibrous or serous coverings. 2. No method of suturing can be entirely satisfactory. (*a*) Because if laceration is superficial it is not required. (*b*) If laceration is deep, the dead space can not be obliterated; as a consequence there is an accumulation of arterial and venous blood mixed with bile from this vascular organ, which may become infected, forming an abscess. If accumulation is excessive, break line of suture and tear protective adhesions. 3. The suture material, to be of any service, must be large; to control hemorrhage it must exert pressure. In the first instance many lobules must be destroyed, and there will be interference with venous and arterial branches and secreting radicles. In the second, a tight-drawn suture may cut through friable structure or cause tissue necrosis. 4. The use of any sealing material, with the possible exception of the actual cautery, is not sound in theory or warranted by results. The best results accrue from drainage by the most direct route and isolating damaged structure. 5. Immediate operation, irrespective of degree of shock, is the only rational method of treatment and the only one which has yielded good results."

27. **Rotation in Lateral Curvature.**—Lovett's article is an illustrated one replying to the criticism of Dr. Judson in The Journal of February 22. He thinks by experiments which he illustrates, he proves his original statement that a strip of sponge rubber rotates just as the spine does in the same position, and that in the flexed position it rotates in one way, and in the over-extended position in the opposite way.

28. **Circumcision.**—The method of circumcision here described by Klotz consists in the withdrawal of the prepuce backward and girdling the penis a little above the corona, taking out a cuff-shaped portion of the skin, but sparing the areolar tissue as much as possible. The cuff-shaped portion should be dissected out and the severed portions of the skin united by interrupted suture. This is not practicable in very young children, and requires a little more time in adults than the ordinary method, but he thinks the result pays for the additional trouble.

31. **Current Differentiation.**—Rockwell reports a case of neuritis, somewhat unusual in its occurrence and distribution,

in which the static and faradic current failed to be of use while the galvanic current was of decided benefit. He offers the case as an illustration of the need of proper study and differentiation of the currents used in different cases.

32. **Insufficientia Pylori.**—This condition is held by Knapp to be the result of chronic gastritis, and a cause of symptoms usually considered as those of chronic dyspepsia. They are diarrhea of constipation or both, fulness in the abdomen, cramps, pain, or a sensation of pressure or of emptiness, or a feeling of weight in the abdomen, due to gases developed in the stomach or intestines; headache, anorexia, nausea, singultus are among the symptoms. Hot and cold sensations and disturbance of sleep are also unpleasant symptoms. He recommends for the diet the withdrawal of all acid foodstuffs and whatever contains or generates gases. He insists on mastication and deliberation in eating: Too much milk, too many eggs, radishes, onions, egg plant, cabbage, beans and peas, develop gases and should not be taken, though the latter may be used in moderate quantity if the cellulose skin has been removed before cooking. The same is true of whole-grain bread which contains cellulose, which is hurtful, and he remarks on the popular misconception as to its utility in some cases. Medicinal treatment consists in giving alkaline drugs to help intestinal digestion, the use of pancreatin and of small doses of inspissated ox gall; the well-known rhubarb and soda mixture has its place here. For the anorexia he suggests condurango, cinchona, gentian and a little HCl with nux vomica. For the constipation he gives half a teaspoonful of sodium phosphate two or three times a day in a tumblerful of hot water, half an hour before meals, and water alone made a little bitter for its moral effect, every two hours, is sometimes useful. He says it is wonderful how such "heroic" treatment will cure constipation provided it is not due to organic troubles. For chronic diarrhea he has found strychnin best and he carries it up to a very large dose, beginning with 1/30 of a grain and increasing it to 1/7. He reports fourteen cases treated.

35. **Contagious Conjunctivitis.**—The more common diseases of this class considered here by Standish are acute catarrhal conjunctivitis, which is self-limited, as a rule, and seldom followed by secondary troubles. He advises the method of aborting it by dusting powdered dry iodoform in the conjunctival sac. Trachoma is treated of more at length. He points out that the curing of individual cases is the best method of stamping out the disease, quoting statistics from the Boston Charitable Eye and Ear Infirmary and those given by Dr. Wilder in his papers on Trachoma in the State of Illinois, in support of this view. As regards gonorrheal ophthalmia he has found protargol of late years of special value; simply parting the lids and flooding the conjunctival sac once in every three hours. The average duration of cases treated with nitrate of silver was 23½ days; with a strong solution of protargol it was only 16½ days. The strength of the protargol has been constantly increased up to the habitual use of a 20 per cent. solution. Diphtherial conjunctivitis, which is a much rarer condition, is also noted, and a number of cases reported. All of these were treated with injections of antitoxin, and in 35 cases in only 3 was the cornea injured sufficiently to produce total blindness. These 3 were complicated with measles.

36. **Lateral Curvature of the Spine.**—What the practitioner needs to consider in lateral curvature of the spine is stated by Bradford as follows: "1. Measures to promote flexibility in a localized position of the spine. Means for the greatest possible rectification of curves. 2. Gymnastic exercises for the development of such muscles as may be needed in given cases, to maintain a corrected attitude. 3. Appliances preventing faulty positions of the spine. 4. Means of recording the condition and progress in cases." He remarks that while elaborate apparatus is often of use, the greater the elaboration the less general is it applicable. He describes methods of employing inexpensive appliances and suggests the following: "A large gas-pipe frame is made and furnished with adjustable sockets. Playing in a pair of these is a cast-steel swing, bent so as to furnish a foot-piece, and at the top at one end so as to fit into a long handle, which will enable the swing to be moved at will or with weights as a pendulum. A small cross rod placed in sockets adjustable by screw pressure, at any desired height on the frame, regulates the point of back pressure, and straps secure the patient to this and to the swing in any desired position. Any desired amount of correcting force can be given. The frame can be made to rest in a doorway, secured by a cord and staples. To arrange for different sizes in patients, an extra swing will be needed, but a fine adjustment is arranged by a cross rod. If this swing is reversed and lowered, it can be applied to the back of the seated patient, secured by proper pressure straps, and made to serve as a trunk-bending appliance with pendulum force. It is believed that a serviceable amount of correcting force can be furnished in the manner described, which, when applied with painstaking thoroughness, will give good results in increasing the flexibility in suitable cases, and moreover, this is at the disposal of every surgeon who has the patience and time to devote to a given case." Dumb-bell exercises for muscle development, etc., are also mentioned.

41. **Carbolic Acid.**—Dessau has found carbolic acid of special value in cases of influenza in children characterized by a dry aggravating cough, somtimes paroxysmal, with little or no expectoration, and that of a tenacious viscid character when present, few or no râles in the lungs, those heard of a dry adhesive quality, and in the intrascapular spaces an indefinite harsh quality of the respiratory murmur, comparable to the broncho-vesicular murmur of Flint. The cough may or may not be associated with coryza, sometimes excoriative; or a pharyngitis, a post-nasal catarrh, a conjunctivitis, or even an otitis media. There may also be a marked raise of temperature lasting for a number of days. The most notable feature is the persistence of symptoms and tendency to alternate with each other as a recrudescence of the trouble. Intestinal symptoms may also alternate with those of the respiratory function. All such cases that have been treated with carbolic acid given in the strength of 1, 2 and 5 per cent. solution dose, according to the age of the patient. An infant under one year of age receives a teaspoonful of the 1 per cent. solution every two hours, while the child of five years may get the same dosage of a 5 per cent. solution. A small amount of glycerin aids in making the solution more complete and cinnamon water may help the taste. Only chemically pure acid should be ordered for internal use and the mothers always be told that the medicine smells of carbolic acid. He has found it perfectly harmless and free from secondary effects when administered in the dose mentioned. The only idiosyncrasy observed against its use has been vomiting.

47.—This article has appeared elsewhere. See THE JOURNAL of October 4, title 104, p. 861.

49. **Consumptives as Social Outcasts.**—The region in the Adirondacks in which Adams has been visiting has been the resort of consumptives for many years and until within the last two years they were treated with humanity and consideration. The proprietor, himself forty years ago a consumptive, says he has never seen a case develop from the association of consumptives with non-consumptives, but two years ago he found that his old patrons were objecting to this association and the feeling has grown tremendously. Hotel proprietors are announcing in this region that no consumptives are received, and the fear of the disease seems to have infected everybody in the neighborhood, with the result of very serious aggravation of the misery of the consumptives. Adams suggests that a heavy enough burden has been put on these patients and that words are powerful. He thinks we should eliminate the term contagious in the discussion of phthisis. He suggests that unhealthy houses in the cities should be picked out and watched and re-built, and practitioners should educate their patients and the public how to handle the disease, which, though widespread, is not malignantly contagious. He says if we must have registration, let it be of the places, not of the people.

50. **Primary Sarcoma of the Iris.**—Wood and Pusey report cases and discuss the literature, tabulating a large number that they have found. They speak strongly in favor of enuclea-

tion in preference to iridectomy and other methods. From their study of these cases they say only one conclusion is evident, namely, when the diagnosis of sarcoma is established the globe containing the growth should be immediately enucleated.

51. **Traumatic Enophthalmos.**—After reporting a case, Kilburn discusses the etiology and favors Shoemaker's opinion that it is due mainly to rupture of Tenon's capsule or the thickened bands of this, known as the check ligaments.

56. **Uncrossed Optic Nerve Fibers.**—Bernheimer reports certain observations which he has made on the eye and brain of a child with bilateral microphthalmos and on account of the peculiar and irregular arrangement affording special facilities for the study of this question. He finds that in the left half of the chiasm in 20 dorsal sections, completely isolated bundles of fibers can be seen and followed for long distances, passing deep downward and inward from the left tract, and through the chiasm parallel to its lateral margin, far into the optic nerve. In the tract single fibers of the most lateral of these can be followed backward almost to the point where the tract meets the peduncle, and forward in the nerve of the same side almost to the optic foramen. This, he says, is the first directly anatomical proof of the existence of uncrossed fibers, and the question is ultimately settled in the strict anatomical sense, in favor of semi-decussation.

59. **Scleral Scars in Glaucoma Operations.**—Andogsky and Selensky conclude that scleral scars possess a certain permeability at a certain stage of their development, but not in the degree claimed by the adherents of the filtration-scar theory. The permeability is of comparatively short duration. In conclusion they remark in regard to the recently proposed incision of the chamber angle that it is to be regarded as simply for a short time providing an artificial channel for the exit of the aqueous humor, and it probably exerts only an indirect influence on the restoration of the normal channels.

60. **Acuteness of Vision and Astigmatism.**—From the study of 440 boys, Steiger concludes that perverse astigmatism even when of a low degree, reduces vision gradually and correction causes marked improvement. It is in this form that asthenopia is most frequent and pronounced. The lower and middle degrees of corneal astigmatism up to 1.75 D. permit in the young good vision which usually can be improved by correction. This, however, is less frequently required on account of the diminution of vision than on account of the asthenopia. The higher degrees of astigmatism, 2 D. or more, cause usually a diminution of vision to 1/3 or 1/2 and frequently with the best correction vision is not improved beyond the moderate average 1. Here correction is indicated not only on account of asthenopia, but also on account of diminution of vision. It is not wise to leave uncorrected an eye with a poor vision at an age when myopia threatens. He promises in a later publication to discuss the relation between astigmatism and myopia. Persons with unilateral astigmatism have rather poorer vision than those with bilateral astigmatism of the same degree and are less readily corrected. The question whether one eye should be corrected or not in such cases depends on the condition of the other eye, age, calling, and the presence or absence of asthenopia. In general, a strong astigmatic glass before one eye is not well borne when the other is normal.

62. **Iodin-Vasogen in Corneal Infiltration.**—Duane has used this preparation in 19 cases, 2 of which he reports. His conclusions from his study are given as follows: "1. Iodin-vasogen is a valuable application in infiltrated and spreading ulcers of the cornea, whether associated with purulent conjunctival secretion or not. It is particularly indicated in those cases in which the galvano-cautery is contra-indicated by the situation of the infiltrate. 2. It rarely causes pain, if not applied in excess, and never causes any unpleasant reaction or untoward effects. 3. Preliminary anesthetization of the cornea with cocain is rarely required, and in general is better omitted. 4. The application is best made every other day until the infiltrate begins to shrink decidedly and then should be made every three or four days until the infiltrate disappears."

69. **Tonsillar Infection.**—The mechanism of diseases of remote origin from tonsillar infection is discussed by Forchheimer, who reports a case of appendicitis and cases where jaundice occurred secondary to infection of the tonsils. He discusses the physiology and pathology of tonsillar inflammation, concluding that the bacilli are taken up by these organs and carried into the general circulation through either the lymphatics or through the blood, thus infecting the points of least resistance in other parts of the body. Jaundice may also be produced by way of the gastrointestinal tract causing gastritis followed by duodenitis, but this method of infection may be excluded in his cases.

70. **Tubercular Peritonitis.**—Rotch is preparing a report of the cases of tubercular peritonitis that have occurred in the Children's Hospital, Boston, during the past eight years. The present paper is simply compiled to state when, and in what class of cases laparotomy should be performed with a reasonable chance for recovery, and to present some cases which recovered after the operation for laparotomy. The chief points to be noticed are: 1. That tuberculous peritonitis is rare in the first year, and when it occurs at this age, is almost invariably fatal, being part of a general tuberculosis and not amenable to treatment by laparotomy. 2. That the most common age for the disease to appear is from one and one-half to four years. 3. That all the cases of tuberculous peritonitis may be divided, pathologically, into primary and secondary cases. The secondary cases are generally those infected from the lungs, from the intestines and from the mesenteric lymph nodes. 4. Where the lung or any important organ is the primary cause, the prognosis is that of general tuberculosis, and laparotomy is seldom of any use. This class includes those in which there are tuberculous ulcers of the intestine. In some cases of tuberculosis of the mesenteric lymph nodes, laparotomy may be indicated in the treatment, and where the tuberculosis is primary in the peritoneum it is generally indicated and often followed by cure. 5. A distinction should be made between those primary cases in which there are many thick adhesions and advanced tuberculous lesions not accompanied by the presence of much fluid, and those in which the tuberculosis is represented by miliary tubercles of the peritoneum with ascites. In the first class although the prognosis is not so good as in the second, still laparotomy should be performed. The second class is most promising for recovery. He reports briefly half a dozen cases and advises exploratory laparotomy as safer in many cases than the non-operative course.

73.—See abstract in THE JOURNAL of October 4, p. 854.

75.—See THE JOURNAL of October 11, p. 916.

76. **The Recurrence of Cancer After Hysterectomy.**—Cushing reports a case of secondary operation for cancer recurrence after complete hysterectomy, giving the details of his method. The result apparently was good and he believes in such cases such operation as here reported will be found feasible and many unfortunate women be saved or greatly relieved. The patient is often in a better condition physically than at the time of the first operation and the disappointment in finding that the previous surgical interference has been in vain is doubly cruel and intolerable. He gives the details of his case in which one of the ureters was severed and re-united by the Van Hook method. In any future similar opportunity he will unite the ureter over the catheter, passing it down through the distal portion of the severed ureter into the bladder and out through the urethra, and slip the upper end of the catheter into the proximal end of the ureter, uniting the ends carefully over the catheter, which can safely remain in place for a week or more.

85. **Spinal Anesthesia.**—Weber describes the methods and states what he considers the indications for this method of anesthesia. He has found it satisfactory for all operations on the limbs and in the perineum, for groin operations and for plastic vaginal work. Vaginal hysterectomy and adnexa operations through the vagina can be better done under general anesthesia, he thinks, but bladder operations are all feasible under this method. In intra-abdominal work he would prefer general anesthesia for many reasons. The spinal anesthesia might not extend sufficiently high, and nausea and vomiting might cause protrusion of the bowel and serious embarrass-

ment. It may be difficult to keep the patient in the Trendelenburg position, but if general anesthesia is contra-indicated or impossible, spinal anesthesia might be tried. He thinks this method in the future will find its greatest field in obstetric work and it may be used occasionally for operations high up in the body, though thus far such operations with it are exceptional. Its merits are that it saves an assistant; kidney disease is no contra-indication nor is chronic or acute bronchitis. It is practicable in hard drinkers where general anesthesia may be impossible and in cases of patients that suffer from shock or hemorrhage, and, therefore, bear ether and chloroform badly. In myocardial disease he thinks it has no special advantage over ether narcosis, excepting when myocarditis is associated with lung or kidney disease. The objectionable features are the fussiness of the injection, the nausea and vomiting which occur in about one-half of the cases, and the consciousness of the patient during the operation. As regards the mortality, he thinks that it is hardly possible to determine this for lack of more experience, but it has been used for many operations on feeble, old, diseased individuals who would have given a high mortality under any anesthesia, and spinal anesthesia was used for this very reason. The deaths, if indeed they were due to spinal anesthesia, were due to the cocain and not to the method of administration. If we could have a substance that does not have the selective poisonous action on the centers in the medulla that cocain has, this would be obviated.

86. **Mammary Substance in Uterine Fibroids.**—Crouse has employed mammary gland extract in several cases of fibroids which he reports, and finds that it controls menorrhagia, metrorrhagia, and dysmenorrhea and in properly selected cases where the myomatous feature predominates, reduces the size of the growth. He compares its employment with various other remedies and operations and finds no bad effects except contractile pains in the tumor when given in maximum doses, which subside when the remedy is stopped or dosage reduced. He concludes his paper with letters from Dr. Shober, the introducer of the remedy, and Dr. Pryor in favor of the method.

88. **Puerperal and Gestational Paralyses.**—Aldrich reports several cases briefly that he has observed himself and discusses the others in the literature. He thinks the neuritis causing the paralysis may possibly have some toxemia as a cause and be the direct result of poisoning from the blood laden with the effete matter from the failure of an established ratio between production and elimination of the poisonous emanations of the two individual organisms. Of course, some cases may be accounted for by supposing pressure or strain on the arterial trunks or on the nerves themselves, and isolated paralysis of the nerves of the upper extremities when immediately following labor may be due to injury of the nerve by ill-directed muscular effort during labor or faulty position of of the member while under anesthesia. Central paralyses are rare, that is, those due to direct injury to the brain, and may often be considered as merely coincidences. The lesion may be embolic, originating from the dislodgement of a small bit of fibrin or a fragment of a clot of blood from one of the uterine sinuses. Cases of extensive polyneuritis have been found to follow septic labors and be due to degeneration of the nerve tissue itself or septic inflammation. They may take the general form of the ascending type, closely resembling Landry's paralysis.

89. **Cystic Degeneration of the Ovaries.**—After reviewing the literature on the subject, Goldspohn concludes that the weight of authority is in favor of the retention-cyst theory, and that the condition is most generally the result of inflammatory processes, evidences of which are usually present in other parts of the ovary or in its surroundings. In scores of cases he has been able to observe the following succession of events: "1. Bimanual examination or compression of an ovary, directly exciting or aggravating a pain, mostly in the inguinal region, loin, or hip, or in a limited intercostal area of the same side, and much more frequently on the left than the right side. 2. Removal of one or more of these follicle cysts by exsection and closure of the gap. Sometimes also an incidental improvement in the location of the ovary, as when operating for retroversion of the uterus. 3. An immediate, occasionally a gradual, but permanent cessation of the pain. These events, occurring in the same succession in, say, seventy-five similar cases, must have more than the mere *post-hoc* relation to each other in the majority of cases. Nor can the results be accounted for, among sensible men, by the old platitude of the mere suggestive effect of an operation."

95. **Cirrhosis of the Liver.**—Edwards' article is largely a discussion of the literature and of the classifications that have heretofore been adopted. The one which he offers is attempted rather with the view of including the principal conflicting clinic and pathologic divisions than of being an infallible and strictly scientific arrangement of the varieties of cirrhosis of the liver. It is as follows:

I. CAPSULAR CIRRHOSIS—ALSO KNOWN AS GLISSONIAN OR LYMPHATIC CIRRHOSIS.

(*a*) Chronic perihepatitis: isolated or part of a chronic peritonitis:

(*b*) Portal vein syphilis (also vascular in origin).

II. VASCULAR CIRRHOSIS.

(*a*) *Hepatic Vein.*—1. Stasis cirrhosis (cyanotic induration). 2. Cirrhosis in (3) or Laennec's cirrhosis, also, Brieger and Sabourin's, known as bivenous cirrhosis.

(*b*) *Portal Vein.*—3. Laennec's cirrhosis or atrophic. First stage, pseudohypertrophy. Second stage, atrophy. 4. Hypertrophic alcoholic cirrhosis, like Laennec's, only remaining large; fatty cirrhosis. 5. Cirrhosis from portal vein syphilis and from pylethrombosis.

(*c*) Arteriosclerotic cirrhosis.

III. BILIARY CIRRHOSIS.

(*a*) Obstruction. "Retentions icterus" and cirrhosis.

(*b*) Biliary or hypertrophic in French sense. 1. With icterus. 2. Without icterus. Hanot's cirrhosis.

IV. MIXED CIRRHOSIS.

Vascular (II) and Biliary (III) varieties combined.

97.—See abstract in THE JOURNAL, xxxviii, p. 530.

98.—Ibid.

107. **Fractures of the Patella.**—This article of Courtney's is an argument for the value of treating patellar fractures in selected cases by opening the joint and suturing. He thinks the treatment is practically without danger if properly carried out, and will result in almost perfect restoration of function and anatomy. Where a practitioner can not meet all the conditions necessary to the perfect treatment of a fractured patella, he will best serve his client's interests and his own reputation, by transferring the case to a thoroughly competent surgeon.

108. **Puerperal Eclampsia.**—Rothrock reviews the theories of puerperal eclampsia and calls attention particularly to the importance of thorough urinary analysis, including not merely the detection of albumin, but also the amount of urea which he finds to bear no relation to the degree of albuminuria. He thinks the test should be a part of the routine practice and that every possible test to determine the renal insufficiency should be employed. In examining for urea the quantity eliminated in cases of insufficiency varies greatly at different times so that it is absolutely necessary to estimate from the twenty-four-hour collection.

109. **Position of the Uterus.**—Robinson's article is an anatomical study of the position of the uterus in all its modifications.

110. **Requirements of Sanitation.**—Bracken sums up the propositions in this paper in the following: "1. In dealing with sanitary problems the physician should be a leader. 2. In villages and cities there should be sanitary organizations, having in their membership lay representatives as well as physicians. 3. In country districts the sanitary problems should be under the strict supervision of a county health officer acting in conjunction with the various township health officials and

the State Board of Health. 4. The county health officer should be a physician of good standing among his fellow practitioners, and should receive a reasonable compensation for services rendered. 5. The Minnesota State Sanitary Association should have full representation from the various county, city and village organizations."

112. **Intestinal Anastomosis.**—Three cases treated by suture are reported by MacLaren, who discusses the various methods of operation. He does not favor the general use of the Murphy button, but it is of special use in operations in certain parts of the bowel, for instance, such as the duodenum, in certain circumstances in the ileocecal region of the stomach, but particularly in the lower segment and rectum. For intestinal suture he favors the Connell mattress suture, which he thinks is the best one yet offered. The only objection is that the suture line might be infected by contact of the suture material with the intestinal mucous membrane during the suturing and tying of the knots. The last one or two sutures are hard to place, and the first time he tried it, he put in three single Lembert sutures to complete the closure. He has used it five times, three of the cases being here reported, of which two made a good recovery.

116. **Electricity and Life.**—Clements reviews the experiments reported by Loeb and Matthews from a vitalistic standpoint and sums up that the experiments are of a limited and fragmentary kind, comparatively, using only a few very low forms of life and only isolated or segmentary parts of life phenomena being manipulated. None of the experiments have to do with the specifically ultimate life processes in their causation and initiation; merely vital operations already in force are influenced, and the results and conclusions, while interesting and of value, do not touch the problem of life itself. It is puerile, therefore, to speak of the establishment of the identity of electricity and life by any such experiments and discoveries as these.

117. **High Myopia.**—Sherer favors operation in myopia of sufficient degree to embarrass the individual in his social and business relations, in progressive cases and where serious symptoms ensue. He would perform discission alone before twenty years of age, and after that discission and extraction may be necessary. He thinks in favorable cases and in skilled hands the danger is trifling, but especially in older persons, complications should be watched for.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures and single case reports are omitted unless of exceptional general interest.

British Medical Journal (London), September 27.

1 *A Discussion on the Pathology of Nerve Degeneration. Frederick W. Mott and others.
2 Cinematograph and Lantern Demonstration upon Nervous Diseases in the Lower Animals. Chalmers Watson.
3 A Note on the Condition of the Central Nervous System in a Case of African Lethargy. W. B. Warrington.
4 *A Discussion on the Place of the Bacteriological Diagnosis in Medicine. G. Sims Woodhead and others.
5 *An Inquiry into the Influences of Soil, Fabrics, and Flies in the Dissemination of Enteric Infection. R. H. Firth and W. H. Horrocks.
6 Case of Arrested Development of the Cerebellum and Its Peduncles; with Spina Bifida and Other Developmental Peculiarities. Keith Monsarrat and W. B. Warrington.
7 *A Discussion on the Relationship of Human and Bovine Tuberculosis. D. J. Hamilton and others.
8 Rheumatic Myocarditis. Theodore Fisher.
9 A Discussion on the Fetal Bone Diseases. J. W. Ballantyne and others.
10 Bilharzia Hematobia in Cyprus. G. A. Williamson.
11 Contribution to the Study of B. Pestis: Its Cultural and Morphological Characters, and Its Relation with B. Pseudo-Tuberculosis Rodentium. Bruno Galli-Valerio.
12 Statistics of the Blood Examination in Cases of Malaria in Cyprus During a Period of Twelve Months. G. A. Williamson.
13 Remarks Concerning the Nomenclature, Etiology and Prophylaxis of the Intermittent Fevers. L. W. Sambon.
14 *The Leucocytes in Malaria. C. H. Melland.
15 A Simple and Effectual Method of Sterilizing Catgut. A. W. Mayo Robson.

The Lancet (London), September 27.

15 Some Morbid Conditions of the Mouth. Edmund W. Roughton.
16 The Radical Treatment of Chronic Intestinal Tuberculosis, with Suggestions for Treatment in More Acute Disease and in Tuberculous Peritonitis. A. W. Mayo Robson.
17 Clinical Remarks on Some Tumors of the Anterior Abdominal Wall. Fred D. Bird.
18 The Recent Cholera Outbreak in Canton, South China. W. J. Webb Anderson.
19 Some Cases of Chronic Pancreatitis. B. G. A. Moynihan.
20 Pythogenic Pneumonia. A. H. Copeman.
21 *On Two Cases of Paralysis Complicating Gonorrhea. T. R. Glynn.
22 Operations Under Analgesia Produced by Intraspinal Injections of Cocain. H. Littlewood.
23 Leucocyte Enumeration for Routine Work. William G. Savage.
24 Buphthalmos, or Congenital Hydrophthalmos. George Wherry.
25 A Note on Syphilis in Relation to Life Assurance, with an Examination of 500 Consecutive Claims. F. Parkes Weber.

Journal of Tropical Medicine (London), September 15.

26 Remarks on the Nomenclature Etiology, and Prophylaxis of the Intermittent Fevers. Louis W. Sambon.
27 The After-Complications in the Operative Treatment of Cataract. R. H. Elliot.

Archives de Neurologie (Paris), September.

28 General Paralysis at Moscow Clinic of Mental Diseases. S. Soukhanoff.—La paralysie gén. d'après les données de la clin. psych. de l'Université de Moscou.
29 *Depression in the Cornea Accompanying Serious Injury of the Brain. B. Talihas.—Dépression kératique et états encéphalopathiques graves.
30 Une observation de sein (breast) hystérique. Viallon.
31 Transactions of XII French Congress of Neurologists and Alienists. Grenoble, August 1.

L'Obstetrique (Paris), vii, 5.

32 Childbirth in Case of Rachitic Pelvis. J. L. Valency.—De l'accouchement dans les bassins rachitiques. Statistique et pronostique.
33 *L'infection puerpérale à la Clinique Tarnier. Perret.
34 *Quelques observations d'infection puerpérale à forme septicémique traitée par les abcès de fixation. H. Chéron.

Semaine Medicale (Paris), September 17.

35 Danger of Dissemination of Hydatid Cysts from Rupture or in Operating on the Mother Cyst. L. Cheinisse.—Des kystes hydatiques multiples de la cavité abdominale par greffe echinococcique.

Berliner Klin. Wochenschrift, August 18.

36 Prevention of Ophthalmia Neonatorum by Credé's Method. G. Leopold.—Zur Verhütung der Augenentzündung der Neonat. durch Credéisirung.
37 *Connection between Joint Formation in the First Costal Cartilage and the Healing of Pulmonary Tuberculosis. W. A. Freund.—Gelenkbildung am ersten Rippenknorpel.
38 Zur Prognosis der Meningitis tuberculosa. A. Gross.
39 Entire Catheter Slipped from Physician's Hand into Bladder. Von Brunn.—Zur Kenntniss von den Fremdkörpern der Harnblase.
40 Squint Operation for Congenital Paralysis of Rectus. F. Schoeler.—Ueber die Schieloperation bei ang. Lähmung des Musculus rectus externus.
41 (No. 34.) What is Bovine Tuberculosis? J. Orth.—Was ist Perlsucht?
42 Lysol Intoxication. Tausch.—2 Fälle von Lysolvergiftung.
43 Beitrag zur Differenzierung von Typhus-, Coli- und Ruhr (dysentery) Bacillen. M. Klopstock.
44 (No. 35.) *Venous Congestion in the Face Early Sign of Progressive Paralysis. E. von Nissl.—Ueber Stauungserscheinungen im Bereich der Gesichtsvenen bei der prog. Paralyse.
45 Ueber die quantitätiven Beziehungen von Amboceptoren, Complement und Anticomplement. J. Morgenroth und H. Sachs.
46 Beitrag zur Chirurgie der Gallenwege (biliary passages). O. Zeller.
47 Relations between Anemia and the Alimentary Canal. H. Strauss.—Zur Frage der Beziehungen zwischen perniciöser Anämie und Magendarmcanal. (Commenced in No. 34.)
48 *Metabolism in Tuberculous Subjects. Mircoli and Soleri.—Ueber den Stoffwechsel bei Tuberculösen. (Commenced in No. 34.)

Centralblatt f. d. Grenzgebiete der Med. u. Chir. (Jena), V.

49 (No. 15.) *Cephalic Tetanus. H. Neumann.—Der Kopftetanus. Critical Review. (Commenced in No. 13.)
50 (No. 16.) *Syphilitic Affections of Intestines. A. Weiss.—Die syph. Erkrankungen des Darmes. Critical Review. (Commenced in No. 15.)
51 (No. 17.) *Obstetric Paralyses of Upper Extremity in Children. E. Stransky.—Ueber Entbindungslähmungen der oberen Extremität beim Kinde. Critical Review. (Commenced in No. 15.)

Deutsche Med. Wochenschrift (Berlin and Leipsic). xxviii.

52 (No. 37.) Alkohol und Sublamin als Händedesinfektionsmittel. Fürbringer and others.
53 *Ueber neurasthenische Neuralgien. E. Jendrassik. (Commenced in No. 36.)
54 (No. 38.) The Diet in Hot Weather. F. Hirschfeld.—Ueber Ernährung in der heissen Jahreszeit und im warmen Klima.
55 *Beitrag zur Bottini'schen Operation. S. Jacoby.
56 *Practical Results of Biologic Blood Test. Uhlenhuth.—Praktische Ergebnisse der forensischen Serodiagnostik des Blutes. (Commenced in No. 37.)
57 Human Chyle. H. Strauss.—Ueber osmotische und chemische Vorgänge am menschlichen Chylus.
58 Legislation in Regard to Meat Preservatives. Strassmann.—Verbot der schwefligen Säure und ihrer Salze.
59 Discussion of Measures to Control Quack Ads. Biberfeld.—Zur Bekämpfung der Kurpfuscherei.
60 Hemoglobinurie und Chinin-Prophylaxe. A. Plehn.

Monatsschrift f. Geb. und Gyn. (Berlin). August.

61 Tuberculosis of Genitalia in Girls. H. Brüning.—Tub. der weibl. Geschlechtsorgane im Kindesalter.

62 Comparative Advantages of Length- and Cross-wise Incision in Cesarean Section. F. Curschmann.—Bietet der quere Fundalschnitt (Fritsch) bei der Sectio ces. gegenüber dem Längsschnitt durch die Corpuswand Vortheile?
63 Gonococcus in Deep Layers of Tube Wall. E. Kraus.—Nachweis von Gonokokken in den tiefen Schichten der Tubenwand.
64 Typhusbacillen in der Tube. J. Koch.
65 Laceration of Uterus During Birth. J. Krebs.—Ueber Gebärmutterzerreissung während der Geburt.
66 Review of Dutch Literature on Obst. and Gyn., 1901-1902. M. M. de Mouchy. (Commenced in No. 5.)
67 Artificial Sterilization of Women. H. Hübl.—Ueber künstliche Sterilisirung des Weibes. Critical Review. (Commenced in July number.)
68 Ueber die Anatomie und Aetiologie der Blasenmole. F. Kermauner. Critical Review.

Muenchener Med. Wochenschrift, September 16.

69 *Evidence of Simulation in Hysterics and Damage Cases. R. v. Hösslin.—Zum Nachweis der Simulation bei Hysterischen und Unfallskranken.
70 *Diagnosis of Hourglass Stomach. J. Decker.—Zur Diagnose der Sanduhrmagen.
71 *Operative Treatment of Hourglass Stomach. A. Schmitt.—Zur chir. Therapie des Sanduhrmagens.
72 *Principles for Treatment of Syphilis. E. v. Düring.—Grundsätze der Syphilisbehandlung.
73 Sublamin as a Disinfectant. M. Blumberg.—Wirkung des Sublamins als Desinfektionsmittel.
74 *Glycosurie und Tabes. E. Meyer.
75 Menstruatio praecox. O. Stömmer.
76 Bicycle Pump in Rectum. Scherenberg.—Fremdkörper im Mastdarm.

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77 Addresses and Discussions at Eleventh Italian Congress of Psychiatry, September, 1901:
78 *a.* Recent Progress in Neuropathology, Psychiatry and Management of the Insane. Seppili.
79 *b.* Classification of Psychopathies. De Sanctis.
80 *c.* Genesis and Nosography of Progressive Paralysis. Bianchi.
81 *d.* Asylums for the Insane. Tamburini.
82 *e.* Practical Suggestions Which Psychiatry Can Give to Pedagogy. Agostini.
83 *f.* Criteria and Methods for Educability of the Mentally Weak and Unbalanced.
84 Sugli apparati fibrillari endocellulari di conduzione nei centri nervosi dei vertebrati superiori. Donaggio.
85 Sulla paresis labio-glosso-laringea di natura neuronica. (Sindrome di Erb). Ventra.
86 Sugli eredo-pellagrosi (hereditary pellagra). Agostini.
87 Alterazioni anat. e histol. del sistema nervoso nel morbo di Parkinson. Burzio.
88 *Nuove proprietà tossiche e terapeutiche del siero del sangue degli epilettici e loro applicazione pratiche. Ceni.
89 La dieta declorurata nell' epilessia. Cappelletti.
90 Saggi di radiografia stereoscopiche del cranio. Masi.
91 Note ed appunti di anatomia patologica in malatie di mente. Angiolella.
92 L' indice-craniografo. Algometro a puntura. Belloni.
93 Due casi di delinquenza seguita a trauma nervoso. Crisafulli.
94 La ruminazione nella specie umana. Cascella.
95 Di un nuovo ipnotico pei malatie di mente: Cloretone. Cappelletti.
96 Ricerche ergografiche in epilettici. Colucci.
97 *Ulteriore contributo allo studio delle leggi che regolano la ereditarietà psicopatica. Pieraccini.
98 Influenza del lavoro intelletuale prolungato e della fatica mentale sulla respirazione. Obici.

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99 (Nos. 9 and 10.) Effect of Steam Disinfection on Certain Physical Properties of Fabrics. P. A. Patzanovski.—O vliyanii parovoi dezinfektzii.
100 Atropin in Intestinal Obstruction. E. Diatchenko.—O primyenenii atropina pri neprokhodimosti kishek. (Concluded from No. 8.)
101 (No. 14.) *Hemorrhage from Mesenteric Gland in Typhoid Fever. M. I. Rostovtzeff.—Slutchai oslozhneniya tipha krovotetcheniem iz bryzhetchnoi zhelezi.
102 (No. 16.) Four Cases of Congenital Cerebral Hernia. V. P. Zhukovski.—4 Slutchaya vrozhdennykh mozgovyykh gryzh. (Commenced in No. 12.)
103 *Cardial Asthma and Allied Conditions. L. V. Popoff.—O serdetchnom udushye. (Commenced in No. 9.)
104 (No. 17.) Study of Specific Immunizing Substance in the Blood in Typhoid Fever. N. N. Georgievski.—O vremeni poyavleniya specifitcheskova immunizir. veshtchestva v krovi pri bryushnom tiphye.
105 (No. 18.) Secretion of Intestinal Juice. V. O. Savitcha.—Otdyelenie kishetchnova soka.
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108 (No. 22.) Study of Osmosis of Red Corpuscles in Certain Pathologic Processes. G. F. Lang.—O pritchinakh novysheniya osmotitcheskoi stoikosti krasnykh krovyanykh tyeletz pri nyekotorykh pat. protzessakh.
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111 K etiologii noma. O. P. Korsh.
112 Pharmacologic Experiments on Isolated Heart of Warm-Blooded Animals. N. I. Botcharoff.—Pharm. opyty nad isolirovannym serdtzem.
113 The Campaign Against Malaria. V. Kashkadamoff.—O borbye s malyariei.
114 (Nos. 26 and 27.) Influence of Pilocarpin on Gastric Secretion. I. Tzitovitch.—O vliyanie pilocarpina na secretziu zheludotchnykh zhelez.
115 Effect of Locke's Method of Artificial Nourishment on the Excitability of the Nerve Elements. P. J. Kaufmann.—O vliyanii iskusstvennova pitaniya, po sposobu Lokka, na vozbydimost nervnykh elementov.
116 (No. 28.) *Intestinal Worms in Etiology of Appendicitis. M. I. Rostovtzeff.—Rol kishetchnykh glist v etiologii perityphlita.
117 *Stab Wounds of Thorax. B. K. Finkelstein.—O pronikayushtchikh koloto-ryesanykh ranakh grudnoi polosti. (Commenced in No. 19.)
118 (No. 29.) Ankylosis of the Spine. P. Ostankoff.—Ob odervenyelosti pozvonotchnika (forma Bechterewa) i o chron. ankyloziruyushtchem yevo vospalenii (forma Strumpell-Marie).
119 *Are Helminths Concerned in Etiology of Appendicitis? S. S. Virsaladze.—Imeyut li glisty etiolog. snatchenie pri appendicit'ye?
120 (No. 30.) Epidemic of Typhoid. S. Unterberger.—Typhoznaya epidemiya v Tzarskom Selye.
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122 (No. 32.) Dermatol as an Antidiarrheic. P. S. Falkner.—D. kak protivoponosnoi sredstvo.

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123 (No. 4.) Nomenclatura de las causas de defuncion. J. de Salterain.
124 (No. 6.) *Localizacion palpebral del catarro primaveral. L. Demicheri.
125 Gunshot Wound with Double Perforation of Urethra in Child. Spontaneous Recovery. P. Pena.—Herida de bala en el abdomen con perforacion de la uretra.
126 Purpura hemorrhagico de origen tifico. L. Morquio.
127 (No. 7.) *Sobre quistes hidaticos del cerebro. L. Morquio.
128 Acrodermatitis supurativa. J. B. Foresti.
129 2 casos de paralisis del musculo oblicuo superior consecutiva a la trepanacion del seno frontal. M. Quintela.
130 Inversion uterina infectada. E. Pouey.

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1. **Nerve Degeneration.**—Mott considers especially the chemistry of degeneration. The first attempt which he made was by estimating the amount of phosphorus in the two halves of the spinal cord in which unilateral or nearly unilateral degeneration had resulted in recent cerebral lesions. He found that on the side on which the Marchi reaction of degeneration occurred, as shown by microscopic examination, less phosphorus was yielded and came to the conclusion that it depended on the splitting up of the complex phosphoreted fat lecithin into smaller bodies such as cholin, glycerophosphoric acid, and stearic or oleic acid. The cholin and glycerophosphoric acid escape into the blood, and the nonphosphoreted fatty substance is left behind and is blackened by the action of osmic acid. At first he was led to believe that cholin might be a toxic agent in rapid degenerations, such as general paralysis, and he made a number of observations as to increase of cholin in the blood and in the cerebrospinal fluid of a large number of cases of this disease and found it proportionately greater. The examination of tissues by the Marchi method showed abundant recent degeneration, but he soon found that this was not peculiar to paresis. It also occurs in beri-beri, alcoholic neuritis, sclerosis of various forms, etc. It then occurred to him and his collaborator, Professor Halliburton, that they could experimentally show the association of the successive changes in the histology of the degeneration of nerves with the disappearance of phosphorus, increase of water in the nervous system, appearance of cholin in the blood, by associating histologic observations on the degenerating nerves with chemical analyses and physiologic and chemical tests. For this purpose the sciatic nerves were divided and the animals allowed to live various periods of time, and the amount of phosphorus and water estimated in the degenerated and regenerated nerves. The blood was examined by the chemical and physiologic tests for cholin and the results correlated with systematic examination of the nerves by the Marchi method. Mott gives the details of the tests for cholin with platinum chlorid. In undertaking the examination of the nerves he came to the conclusion that the neurilemmal sheath plays an important part in regeneration; the cells of the sheath undergo proliferation, and take part, both in the formation of new protoplasmic basis out of which the fiber is developed, as well as in the absorption of the products of degeneration. He does not think the claim supported that if degeneration takes place from the periphery the neuron theory is vitiated, for there is no doubt that degeneration, whether primary or secondary in origin, ceases at the termination of the axons of the cells from which they proceed, and pathologic data all favor the nutritional dependence of the

axon on its connection with the cell of origin. The experiments made by himself and Halliburton support the neuron theory. He has experimented by dividing the posterior roots and observing the regeneration of the divided nerves. While the observations are incomplete they show the following facts: That frequently there is an anastomosis of the median and ulnar nerves in monkeys, and that therefore after section of the ulnar nerves apparently there is no motor functional impairment. That on the side in which the posterior roots have been divided, and the ulnar nerve divided and sutured, regeneration of the motor fibers does not take place so rapidly as on the other side, for stimulation of the nerve with a moderate current gave a response on that side, whereas stimulation with the strongest current on the side which was desensitized and paralyzed by section of the posterior roots, gave no response. He says: "We know that the sensory nerve endings, for example, pacinian and tactile corpuscles, persist after section of the nerve. They are, therefore, capable of receiving stimuli; if the sensory nerves are regenerated before the motor, regeneration will take place along the line of the incoming stimulus, and this molecular vibration may tend to vivify the protoplasmic basis, which has been laid down by the cells of the neurilemmal sheath; and the passage of the stimulus may lead to myelination occurring, for we have many reasons for believing that myelination does depend upon the passage of stimulus. It is not, however, until the connection of the upper segment of the divided nerve with the lower takes place that the stimuli can produce any reflex or conscious effect. We can thus see that if this hypothesis is true, sensory nerves may become myelinated and regenerate independently of connection with the central cell of origin, the receiving and transmitting apparatus being present; but not so with the motor nerves."

4. **Bacteriologic Diagnosis.**—Woodhead has made some 27,000 cultures, of which he has tabulated nearly 25,000 from over 12,000 patients, and from this study concludes that the value of bacteriologic examination with all its limitations is, as a rule, under rather than over estimated. Of course bacteriology is only an aid to diagnosis, and sometimes too much is expected of it, and frequently there is no explanation accompanying the specimen requiring to be examined, and because one is unwilling to give an opinion under such circumstances, bacteriologic methods are denounced. He notices the occurrence of diphtheria bacilli in the throats of healthy persons, and remarks that a single examination is not sufficient in this disease. One would naturally expect to find the mixed infection giving the highest percentage of mortality, but he found that as the typical long form was departed from, the mortality decreases. In cases in which the practically pure cultivations of the typical long bacillus are obtained the mortality is 21.4 per cent.; when the long form is mixed up with the short bacilli, the mortality falls to 20.1 per cent.; when with short and irregular forms only, to 18.6 per cent.; and when with irregular forms only, to 14.6 per cent. He has found also that the streptococcus complicating diphtheria infection does not increase the mortality as much as the staphylococci as the complicating organism, which was by far the most fatal. He also discusses the relation of diphtheria and scarlet fever, and finds many cases reported as the latter undoubtedly diphtheria. It is also true that in a large number of cases reported as diphtheria no diphtheria bacilli can be found, and they are not cases of diphtheria at all. In scarlet fever uncomplicated with diphtheria or streptococci, therefore, not treated with antitoxin, there was a somewhat high mortality. Bacteriologic studies show that the needed period of isolation after diphtheria is much longer than was at one time thought, and the majority of his cases seemed to retain the bacilli in their throats from two to nine weeks after apparent convalescence. In conclusion he mentions the value of serum diagnosis, especially in doubtful cases. A Boer prisoner of war in Ceylon has maintained that he has been able to determine that a certain bacillus cultivated by him in fish broth is the bacillus of leprosy, because the serum from the leprous patient, when mixed with a culture, brings about marked degenerative changes in this bacillus, and this opens up a vista of great possibilities.

5. **Soil, Fabrics and Flies in Enteric Infection.**—Firth and Horrocks have experimented with various samples of fabrics and with different soils as to the vitality of the typhoid germ and from their experiments draw the following conclusions: "1. That there is no evidence to show that the enteric bacillus, when placed in soil, displays any disposition or ability to either increase in numbers or grow upward, downward or laterally. 2. That the enteric bacillus can be washed through at least eighteen inches of soil by means of water, even when the soil is closely packed down and no fissures or cracks allowed to exist. 3. That the enteric bacillus is able to assume a vegetative existence in ordinary and sewage polluted soil and survive therein for varying periods, amounting in some cases to as much as seventy-four days. 4. That the presence or absence of organic nutritive material in the soil appears to be a largely negligible factor, since the enteric bacillus can survive in a soil indifferently well, whether it be an organically polluted soil or a virgin soil, and whether it receive dilute sewage or merely rainwater. 5. That an excess or great deficiency of moisture in soils appears to be the dominant factor affecting the chances of survival of the enteric bacillus in, or at least the possibility of recovering it from soil. 6. That from fine sand allowed to become dry, the enteric bacillus can be recovered on the twenty-fifth day after inoculation. 7. That from fine sand, kept moist with either rain or dilute sewage, the enteric bacillus can not be recovered later than the twelfth day after fouling; this inability to recover the organism is due probably not so much to its death as to its being washed down into the deeper sand layers by liquids added. 8. That in peat, the enteric bacillus appears to rapidly die out, as the microbe can not be recovered from it after the thirteenth day; but this soil is so porous that it is quite possible that the micro-organism was washed down into the deeper parts and consequently not recoverable from the place of inoculation. 9. That from ordinary soil kept damp by occasional additions of rainwater the enteric bacillus can be recovered up to and on the sixty-seventh day. 10. That from a similar soil kept damp by occasional additions of dilute raw sewage, the enteric bacillus is recoverable up to the thirty-fifth day. 11. That from a similar soil kept damp by occasional additions of dilute sterile sewage the enteric bacillus is recoverable up to the seventy-fourth day. 12. That in a similar soil, after heavy rainfall, the enteric bacillus at once disappears from the surface layers. 13. That from a sir ilar soil, allowed after inoculation to become so dry as to be readily blown about as dust, the enteric bacillus can be recovered up to and on the twenty-fifth day; and that enteric infective material can be readily translated from dried soil and sand by means of winds and air currents. 14. That in a sewage-polluted soil recovered from beneath a broken drain, the enteric bacillus is able to survive up to the sixty-fifth day. 15. That from a piece of khaki drill, inoculated with an emulsion of the enteric bacillus and then allowed to become quite dry, the micro-organism is recoverable up to and on the seventy-fourth day. 16. That from a piece of khaki serge, similarly treated, the enteric bacillus is recoverable on the seventy-eighth day. 18. That from a piece of khaki drill fouled by liquid enteric feces and then allowed to dry, the micro-organism is recoverable on the seventeenth day. 19. That from a similar fabric fouled by solid or semi-solid enteric feces and then allowed to dry, the micro-organism is recoverable up to the ninth day. 20. That the enteric bacillus is able to survive in surface soil an exposure to 122 hours of direct sunshine, extending over a period of twenty-two consecutive days. That from a piece of infected serge the enteric bacillus is recoverable after the fabric has been exposed to fifty hours of direct sunshine spread over a period of ten days. 21. That ordinary house flies (*Musca domestica*) can convey enteric infective matter from specific excreta or other polluted material to objects on which they may walk, rest or feed. That such infective matter appears to be attached not only to their heads (mandibles probably) but also to their legs, wings and bodies. It has not been proved that the enteric bacillus passes through the digestive tract of the fly." They deduce a number of practical conclusions from

these, namely, that the dry earth or pail-closet system has many dangerous possibilities, and that in the water carrying system of sewage, the danger of local infection is slight, but the danger commences at the termination of the outlet. He also remarks on the dangers of local infection in connection with dormitories, barracks and the especial difficulties which these indicate in the tropics.

7. **Human and Bovine Tuberculosis.**—Hamilton reviews the various findings by authorities, criticises Koch and Schutz's conclusions and finds that the probability is that the human bacillus varies so much in its morphologic character and pathologic possibilities that it is difficult to say that it is of any certain virulence under various conditions. He thinks, however, that it becomes rapidly acclimated in the cow and gains in virulence by succeeding transplantations and that it will be rash to argue that the difference between human and bovine tuberculosis is anything more than that of degree. The question whether bovine tuberculosis is, as a rule, as virulent to human as to members of the domestic animals is also a difficult one to settle. As far as evidence of inoculation points it is not always shown that the disease thus conferred from cattle to man runs the usually rapid course that it does when inoculated experimentally on the calf. While some have suffered from a generalized tuberculosis, in a good many the disease has remained local. It has been suggested that local tuberculosis, glandular or otherwise, is of bovine origin and that the reason for its remaining local is that the soil is not congenial for its development. Hamilton is now testing this theory.

14. **The Leucocytes in Malaria.**—From a study of the blood of a number of cases of malaria brought from the tropics to Great Britain and also of indigenous cases, Melland concludes that in most cases of malaria there is constantly at some period an increased percentage of large mononuclear leucocytes. This is most marked when the patient is free from fever and while in some instances it is increased during rigor, he thinks no positive conclusions are to be drawn either during the rise of temperature or even shortly before. He has not found the large proportion that some previous observers have noticed. He would go so far as to say that in cases suspected to be of malarial nature the presence of 10 per cent. or perhaps 12 per cent. or over of large mononuclear cells is strong presumptive evidence that the case is one of malaria, but that the presence of less than 8 per cent. is strong presumptive evidence that the case is not malaria. The percentage of large mononuclear cells is of more value than the compound aggregate of large lymphocytes and large mononuclears. He remarks in conclusion that these findings apply solely to the blood of adults. In children the test is valueless since in them the number of mononuclear cells may be markedly increased in many chronic illnesses. He has seen a large percentage in a boy of sixteen suffering from some chronic wasting disease, possibly tuberculous.

21. **Gonorrheal Paralysis.**—Glynn reports two cases, one resembling beginning Landry's paralysis and later multiple peripheral neuritis and the other paraplegia and pseudo-tabes, in both of which the only toxic agent was gonorrheal infection.

29. **Depression of the Cornea in Case of Brain Lesions.**—Pailhas has had occasion to observe five cases of an alteration of the eye characterized by the simple depression of some point on the cornea about 2 to 5 mm. in diameter. There were no appreciable anatomic lesions, but this depression was always noted in connection with a serious brain trouble, traumatic or otherwise. It was unstable, movable, appearing and disappearing at various points. In one case it was noted one hour after a severe traumatism affecting the head, but in the others it occurred during periods of extreme depression in the course of a psychosis, acute delirium or encephalitis. This essentially superficial organic alteration of the cornea must not be confounded with neuroparalytic keratitis which is marked by profound dystrophic lesions and seems to be connected in some way with the trophic centers of the gasserian ganglion. Brière de Boismont has observed somewhat similar findings in cases of acute delirium in insane subjects. Judging from the experience to date, this depression of the cornea accompanies very serious conditions in the brain, with grave prognosis.

33. **Puerperal Infection.**—Perret continues his review of the 127 cases of puerperal infection observed at the Clinique Tarnier during 1901. One woman died out of the 48 who were already infected before admittance, and one of the 79 others. The total number of obstetric cases at the clinic was 1710 during this period and mortality .05 per cent. Sublimate is the main reliance, with iodin and thermocauterization of progressive eschars in vagina or cervix. Hydrogen dioxid was found useful in case of fetid lochia and its action was immeasurably enhanced by previous injection of a 1 per 1000 solution of potassium permanganate. Sodium borate was used in cases in which the uterine or other morbid secretions persisted as it has the remarkable property of drying them up. When the uterus was swabbed a subcutaneous injection of salt solution followed, and in the serious cases 500 gm. were injected every day. The food was made tempting and all drugs avoided.

34. **Fixation Abscesses in Septicemic Puerperal Infection.**—Chéron describes six severe cases of the septicemic form of puerperal infection treated by the subcutaneous injection of 1 c.c. of spirits of turpentine in the flank or arm. The reaction developed in the course of five or six hours and always remained circumscribed. Suppuration occurred in half the cases, and all of these recovered. The abscess was incised when the skin showed evidence of invasion. A second abscess was made in some cases. Cicatrization was always slow. The benefit derived from the abscesses was unmistakable in three of the cases; all of these were marked by suppuration. The infection was too old in one case and was extremely virulent in two others, and these proved fatal. Chéron concludes that a rapidly developing puerperal infection should be treated by swabbing and digital curetting, supplemented by these fixation abscesses. They should be applied early. If the infection be of a mild character it is well to temporize, but if the fever keeps up the turpentine should be injected without delay.

37. **Joint in Costal Cartilage and Tuberculosis.**—Freund describes instances of healed tuberculosis in which there was evidence of the spontaneous formation of a joint in the first costal cartilage. His previous communications on this subject were reviewed in THE JOURNAL. His further research has confirmed the correctness of his views, and he now proclaims that this joint should be artificially established in every case of habitus phthisicus, with recurring apical affections, traceable to stenosis of the upper portion of the chest or upper aperture. The first costal cartilage should be cut through. The action of the muscles will prevent its growing together again, and the result will be an artificial joint, enabling the lungs to expand.

44. **Congestion of Face Sign of Progressive Paralysis.**—Nissl calls attention to the capillary cyanosis of the face that may be the first suggestion of impending progressive paralysis. After exclusion of all other causes for the venous (never arterial) congestion the physician should bear in mind the possibility of this disease in the presence of a psychosis. He attributes the venous congestion in such cases to a paralysis of the vessels of most diverse etiology. There is first congestion, then formation of hyalin, degeneration of the vessel walls and finally of the ganglion cell. The latter may be degenerated when the wall of the vessel is apparently still intact to the eye, from insufficient nutrition from the vessel wall. Even the slightest disturbance in the innervation of the vessel wall leads to insufficient nutrition and degeneration of the ganglion cells. The vascular regions involved are identical with those which Wernicke has established are constantly affected with degeneracy in progressive paralysis.

48. **Metabolism in Consumptives.**—This communication proceeds from Maragliano's clinic at Genoa. It proclaims that a low proportion of nitrogen in the urine indicates the existence of a pure, possibly latent tuberculosis. Quantitative examination of the urine is therefore important as a diagnostic measure. It has also a bearing on the prognosis as the determination of a small proportion of nitrogen at the beginning of the disease is an important and decisive criterion in those cases

in which it is difficult to recognize the disease and institute proper treatment owing to the lack of other symptoms. This sign is all the more significant when the abnormally small proportion of nitrogen in the urine coincides with a loss of weight and distinct nitrogen-diabetes, while at the same time appetite, digestion and absorption show no variation from normal. The physical condition may deteriorate to such an extent in these cases that to restore the normal body weight a surplus of 100 per cent. nitrogen must be ingested and 30 per cent. of calories. The prognosis becomes more and more favorable the higher the percentage of nitrogen in the urine. On the other hand, in case of pyotuberculosis, an entirely opposite condition may prevail, as extensive pyoseptic processes going on in the organism may entail an increased elimination of nitrogen in the urine.

49. **Cephalic Tetanus.**—Neumann distinguishes between two varieties. The form described by Rose is that variety of tetanus which accompanies certain injuries of the head, and is characterized by paralytic phenomena, especially facial paralysis. Brunner's variety includes all the forms of tetanus that appear after an injury of the head. The cardinal symptoms of the latter are increased irritability of the cerebral nerves, expressed in contraction of the mimic, swallowing and breathing musculature. Rose's type is characterized by paralysis or paresis of the facial nerve and eventually of the motor oculi, abducent, trochlear or hypoglossal nerves. The other symptoms are of a more general nature and correspond to those of ordinary tetanus. The two types of cephalic tetanus are therefore tetanus with and without paralysis. The pathologic anatomic findings are as negative in case of cephalic as in ordinary tetanus. Treatment is the same for each, but it is more liable to be successful in the former as the prognosis is much more favorable in this case.

50. **Syphilitic Affections of Intestines.**—Weiss regards the prognosis of these affections as extremely serious. A fifth of all cases succumb to perforation peritonitis, and probably the proportion is still larger. Another fifth suffer from multiple stenosis of the intestines and a certain proportion succumb to repeated hemorrhages. The diagnosis is based on the antecedents and evidence of ulceration in the intestines, pain, diarrhea, blood and pus in the feces. If ulceration is determined it may be peptic, catarrhal, diphtheric, tuberculous, typhoid, syphilitic or due to embolus or anthrax. The exceptionally chronic course and the cachexia are points in favor of syphilis. In every chronic case of intestinal trouble of obscure origin, the possibility of lues must be borne in mind, and the results of specific treatment may confirm the presumptive diagnosis. An operation in case of syphilitic perforation peritonitis has little chance of success, owing to the fragile condition of the tissues.

51. **Obstetric Paralyses.**—Stransky finds in this review of the literature that the application of forceps is only rarely the cause of this paralysis of the upper extremities. It is almost invariably due to manual manipulations, and thus differs from the cerebral group and facial paralysis in which the obstetric maneuvers may co-operate, but only as a subordinate factor. Facial paralysis is liable to occur even with a smooth spontaneous birth. Predisposing factors for this obstetric paralysis of the upper extremities are disproportion between the size of the pelvis and of the fetus, protracted delivery and excessive contractions, exhausting affections on the part of the mother, rigidity of the soft parts and similar conditions favoring asphyxia of the child and local asphyxia of a limb. The paralysis is of the peripheral-radicular type. It probably is the result of some slight neuritic process in the main roots which may entail secondary degeneration. The spontaneous course may be favorable, but is more liable to be the reverse. With appropriate treatment marked improvement or a cure is usually attained. The diagnosis is easy when the case is seen early, but in old cases may offer some difficulty. Treatment should be prophylactic, the avoidance of manual maneuvers, etc., supplemented by the usual neuropathologic measures, with surgical intervention for osteo-articular complications and orthopedic procedures for secondary anomalies in growth and attitude.

53. **Neurasthenic Neuralgia.**—Jendrassik describes a number of cases from his experience at Budapest and warns against surgical intervention in neurasthenic neuralgia. The subjects always exhibit the stigmata of neurasthenia more or less defined: they were "queer children," loved solitude or had unusual interests or none at all, with headaches and insomnia later, temper variable. A hereditary predisposition can be almost always discovered, if nothing else, at least the constant history of headaches on the part of the mother. Frequently other obsessions have preceded the neuralgia. The constancy of the pain is characteristic, also its springing to other parts of the body, especially to the opposite side. There are none of the objective phenomena which accompany genuine neuralgia. The patients are able to keep their mouth and teeth clean and like to do so when the neuralgia is in the face, while in genuine neuralgia they shrink from the slightest contact with the parts. The description of the pain is also quite different from the boring pain of true neuralgia. Pressure is not painful; it frequently affords relief. The exacerbations usually occur in the morning. The pains frequently appear after some slight trauma or intervention, tooth-pulling, rheumatism or something of the kind. The constancy of the pain causes the obsession of some organic disease, cancer, paralysis or a tumor, and the patients cling to this idea with remarkable tenacity and clamor for an operation. They dislike the idea of a systematic course of treatment in a sanatorium, but are eager for any surgical experiment, and numerous are the instances in which their wishes have been gratified, but always with disastrous results. Jendrassik concludes by asserting that neurasthenic neuralgia belongs to the domain of internal medicine and even energetic local treatment must be avoided in these cases. Success is contingent on the systematic carrying through of an individualized course of treatment.

55. **Improved Technic for the Bottini Operation.**—Jacoby is assistant to Professor Nitze, and has devised an appliance for the Bottini incisor, which enables its action to be gauged with the utmost precision, both when it is being inserted and after it is in the tissues. The handle of the incisor carries a disc graduated into fine divisions with an index across the entire face of this dial. It is black on one half of its face to separate the halves more prominently. As the incisor is turned the index shows the exact degree of the movement. This control dial will also be found useful to apply to the ordinary cystoscope.

56. **Practical Results of Biologic Blood Test.**—Uhlenhuth describes nearly two dozen medicolegal cases in which the biologic blood test afforded valuable information, scarcely to be obtained in any other way. He mentions a number of precautions that must be borne in mind in the practical application of the test, and urges the establishment of a central institution where the test can be applied at need by trained experts.

69. **Evidence of Simulation in Hysteria and Damage Cases.**—Hösslin describes a little maneuver which has never failed him in detecting simulation in cases of alleged traumatic weakness of a limb. The patient is asked to make a certain movement with the limb, for example, to flex the elbow and touch the face with his hand. As he starts to make the movement the examiner places his hand so as to interpose slight resistance to the movement. He then suddenly withdraws his hand, which allows the movement to be completed with additional force. The hand actually strikes against the face as the resistance to the movement is withdrawn, if the arm is normal or even if there is paresis or almost any neurosis less than actual paralysis. But if the subject is shamming, he does not try to make the movement as requested, and when the opposing hand is withdrawn the arm does not continue the desired movement but remains suspended, as the antagonist muscles are the ones that are contracted. Hösslin discovered simulation in 35 cases by this means and the legal authorities could see for themselves the value of the test and its results. In each case the course of events confirmed the reliability of this paradoxal antagonist muscle test, as he calls it. In three other cases the test was negative and incipient syringomyelia or other organic disease was revealed later.

70. **Diagnosis of Hourglass Stomach.**—Decker has had two patients recently present the symptoms of hourglass stomach. The pain is significant in differentiating. It differs from the pain of an ulcer in that it lasts longer and is not so much the pain of spasmodic contraction but rather a sensation of distension as when the stomach is filled too full of carbon dioxid. It does not subside after vomiting, but persists half an hour longer. The only means of relieving it in his cases was restriction to fluid food and limitation of the amount. The pains also recurred when the patient resumed a sitting or standing posture after reclining, or when more solid food was taken. After the pains have subsided in case of an ulcer, they do not recur immediately when the patient stands up and takes more solid food. Only small amounts are vomited at a time in case of hourglass constriction. The presumptive diagnosis becomes a certainty when in rinsing the stomach the water returns clear at first and then suddenly fragments of food appear, or when the water introduced vanishes and does not return. To confirm this phenomenon it is advisable to pour in two funnelfuls of water. Another point in differentiating is the hourglass shape of the inflation when the stomach is filled with air or carbon dioxid. This is especially significant when the cardial portion becomes inflated first, and the pylorus portion not until later. Radioscopy is also useful, but the most valuable of all tests is the gurgling sound when one half of the stomach is pressed, and its absence when the pressure is applied to the constricted portion. He concludes by warning against attributing to mere nervousness the symptoms observed in such cases. The condition entails nervous disturbances and they vanish with the removal of the cause. He also suggests that the stomach must be rinsed with the subject sitting or standing, as when reclining the above described signs may prove misleading.

71. **Surgical Treatment of Hourglass Stomach.**—In two of the three cases reported by Schmitt posterior retrocolic gastroenterostomy was performed. In the other, a gastroplastic operation, and ten months later a posterior gastroenterostomy. All were cured. The detaching of the organ from adhesions, etc., is an important part of the procedure. He states that the condition occurs more frequently than is generally recognized and is frequently overlooked in abdominal operations. When congenital the stomach adapts itself to the condition, and it causes little if any trouble.

72. **Principles of Treatment of Syphilis.**—Düring is in charge of the campaign against syphilis instituted in Asia Minor by the Sultan as described in detail in THE JOURNAL of July 5, p. 28. He has also had peculiar opportunities for close observation of syphilitics. His experience has convinced him that syphilis can be successfully treated in certain cases by much smaller amounts of mercury than ordinarily employed. He is also convinced that the connection of tabes with syphilis is in many cases merely the oversaturation of the enfeebled organism with mercury. He contends that the practice of treating syphilis internally, prescribing pills of some mercurial preparation, is disastrous, as too frequently the patient continues to take the pills far more copiously and for longer periods than the treating physician intended. Syphilitics can be grouped in two classes, he remarks, 1, those who recover with very little mercury, and are objectively and subjectively sound, with healthy children, like many of his patients in the foreign colony, whom he meets almost daily, and 2, those who for some reason, either constitutional or in their mode of life, prove more or less refractory to treatment. His experience also corroborates the fact that treatment and hygiene have a tendency to prevent the development of tertiary symptoms. Also that other factors, anemia, neurasthenia, fever, alcohol, irregular mode of life, mental overeffort, worry and excitement are important factors in the development of tertiary symptoms. He makes a practice of waiting before instituting treatment, until the diagnosis is beyond question, except in the rare cases of unusually severe onset. He uses the salicylate of mercury and commences with two injections a week of .08 to .1 gm. He and his aids have made more than 100,000 of these injections in the last six years and have never had a mishap. There was embolism of paraffin in two cases, but it subsided spontaneously without disturbance in twenty-four hours. He continues the injections until all symptoms have disappeared and for a week or so longer. He emphasizes the importance of Turkish baths as an adjuvant to mercurial treatment, and states that he prefers for local treatment of the mucosæ a 2 to 20 per cent. solution of chromic acid, neutralized at once afterward with a saturated solution of sodium bicarbonate. In the second month after the injection treatment has been commenced the patient takes .5 to 1 gm. potassium iodid and is required to return at the end of the month. If found in good condition he is dismissed with instructions to return every fortnight to be inspected. If there are no further symptoms another course of treatment is instituted at the close of the third month, with half the previous doses. This system is continued, increasing the intervals between treatment. In the second and third year one or two courses are sufficient. If some symptom develops immediately after one of the courses of treatment, he applies some local measure, trusting to its spontaneous subsidence, and he has rarely been disappointed. If the symptom is serious, an iritis for instance, he resumes treatment at once with great energy until it is conquered. He says that there is scarcely a single case of tabes or general paralysis to be found among the thousands of syphilitics in Asia Minor and Bosnia.

74. **Glycosuria and Tabes.**—In Meyer's case the elimination of sugar remained essentially the same, irrespective of the carbohydrates ingested, suggesting that the case was not one of a disturbance in the metabolism but that the elimination of sugar was regulated from some point beyond the reach of dietetic influences. The tabes was associated with a bulbar affection, and the glycosuria was probably the symptomatic expression of a tabetic nuclear affection on the floor of the fourth ventricle, similar to and therefore to a certain extent a tabetic puncture.

88. **Successful Serum Treatment of Epilepsy.**—See THE JOURNAL of March 29, p. 843.

97. **Laws of Psychopathic Heredity.**—Pieraccini reports that 1958 inmates of 32 different insane asylums in Italy belong to only 889 families. These 1958 insane subjects include 1064 men and 894 women, and they form 1058 groups or sets of relatives. There are 10 groups of grandparents and one or more grandchildren; 257 groups of parents and children; 488 of brothers and sisters; 153 of aunts or uncles and nephews or nieces and 150 of cousins. Study of these groups shows the predominance of crossed heredity; that the maternal inheritance is the most baneful, and that men seem to be more predisposed to insanity than women. Also that the difference between the age at which a grandparent became insane and that at which the grandchild was affected is marked by an average interval of 44 years; parents and children, by an interval of 23 years, and uncles and nephews, 16 years. The danger of the younger generation becoming insane decreases as the younger subject approaches the age at which the older member of the family became affected, and once past it all danger ceases. There was not a single case in the entire list in which a younger relative had become insane after he had passed the age at which the older member of the family was affected. Another fact impressed on him by these statistics is the absolute fatality of the doom of insanity in the descendants. He thinks that the mental disease should be attributed exclusively to some congenital origin, and not to the external causes to which it is usually ascribed. He also calls attention to the similarity of the mental inheritance. The psychopathies were alike in the majority of cases. In some of the groups mania occurred in one member and lipemania in another, which proves, he thinks, the identical nature of these widely diverse syndromes, both the expression of chronic maniaco-depressive mental disease. The forms of psychopathy known as degenerative were frequent in the descendants: mania in 232 and melancholia in 25. These forms of mental disease should be regarded as constitutional manifestations of hereditary degeneration, not as the expression of a psychoneurosis. The incurable character of family insanity is shown by the fact that of the total only 9 were cured and 67 died in chronic insanity.

101. **Hemorrhage from Mesenteric Gland in Typhoid.**—Rostovtzeff reports the second case on record of this complication of typhoid fever. In both cases the hemorrhage occurred in or from a gland near the appendix and deceptively simulated appendicitis.

103. **Cardiac Asthma and Allied Conditions.**—Popoff does not regard cardiac asthma as a morbid entity. It has varied sources and diverse clinical manifestations, and may be due to changes in cardiac action or it may be of vascular origin. Cardiac asthma proper may be the result of either weakened or augmented heart action, and is characterized by active pulmonary congestion. Asthmatic attacks of vascular origin are more frequent and are often associated with aneurisms and arteriosclerosis. Treatment should be carefully individualized.

116 and 119. **Helminths in Etiology of Appendicitis.**—Both writers attribute but slight etiologic significance to intestinal parasites in appendicitis. Virsaladze found no trace of them in 60 cases examined from this point of view.

117. **Stab Wounds of the Chest.**—Finkelstein has made an exhaustive clinical study of the subject with the following conclusions: Probing is not always satisfactory, and it is more advisable to enlarge the wound and determine its depth with the eye. In case a rib or cartilage is in the way resection should be resorted to only when there is hemorrhage from an intercostal artery and when the source is otherwise inaccessible. When satisfied that the wound penetrates the pleura, an antiseptic tampon should be introduced into the chest cavity. If there are no contraindications it should be left *in situ* for four or five days. In the cases in which the wound was sutured the procedure proved unmistakably harmful in 50 per cent. Complications should be treated on general principles. In case of hemothorax the chest should be opened with a trocar or by resection of a rib. In progressive emphysema an outlet should be made for the air in the pleura. Large extravasations of blood and pyothorax should receive prompt attention.

121. **Hemolytic Power of Serum During Digestion.**—Glintchikoff reports experiments which showed that the hemolytic power of the blood serum increases with the progress of digestion. It reaches the maximum between the sixth and ninth hour. Then it gradually decreases to the thirteenth. The rise and fall of this hemolytic power occur with constant regularity. The rise commences to be noticeable at the third hour after a meal. Fats increase it more than meat or mixed food. Bread and milk occupy an intermediate place.

124. **Papilloma of the Tarsal Conjunctiva.**—Demicheri has observed only 20 cases of this affection, which he calls "spring catarrh," in an experience with 5500 ophthalmic cases. There does not seem to be any relation between it and trachoma, as the latter is comparatively frequent in Uruguay. The lesions were isolated pericorneal hyperplasia in 3 cases, isolated papilloma of the upper lid in 9, and in 8 the complete bilateral type of the affection. An important sign to differentiate it from trachoma is the clean line separating the morbid papillary process on the tarsal conjunctiva from the sound conjunctiva of the upper cul-de-sac. The microscope reveals the accumulation of opalescent papillæ along the upper edge of the tarsus in typical cases. There is great tendency to congestion of the eye from the most trivial causes. Washing the face will induce surprising congestion of the conjunctivæ, and this fact also serves for a sign of the affection. In one of his patients the eyes were excessively congested during the entire catamenial period each month. Another could not drink any alcoholic beverage without intense congestion of the eyes. In this patient, a young man, the attacks of "spring catarrh" had recurred annually for ten years. All his patients improved under treatment with calomel rubbed into the conjunctiva of the lid and application of a salve of white precipitate and cocain, supplemented by suprarenal extract, or curetting. Electrolysis had a remarkably prompt and beneficial effect in some cases, relieving them from the first day. The disturbances subsided spontaneously with the approach of winter, but recurred year after year unless thoroughly treated.

127. **Hydatid Cysts in the Brain.**—Morquio noticed in three cases of hydatid cysts in the brain that the symptoms common to cerebral tumors in general were subordinate to convulsive attacks. There was little if any headache and none in one case, and there was no vomiting. In one case there was occasional vertigo, causing falls when riding, which were assumed to be the cause instead of the effect of the cerebral lesion. The convulsions were accompanied by an apoplectic ictus and relaxation as in epilepsy. The symptoms suggested the latter disease, but the retention of consciousness and the subsequent tendency to paralysis of arm or leg, differentiates the brain lesion in some cases. In others the attacks may simulate epilepsy in all respects, and are deceptive unless the eye is examined for edema of the papilla. When paralysis occurs it indicates the location of the brain lesion, and may simulate spasmodic infantile hemiplegia in its symptoms except for the history of the case. After elimination of tuberculosis and hereditary syphilis, a young subject who presents the above symptoms, especially if he comes from the country and has much to do with dogs, is suspicious of hydatid cyst in the brain. Other signs in its favor are the slowness of the process and the non-disturbance of general nutrition. Months and years may pass after the first symptoms before they excite alarm. The general health in the three children described was unusually robust. The character had been altered in one, until he was considered mentally unbalanced. This was explained by the location of the cyst in the frontal lobe. There are only two or three instances of spontaneous recovery on record and surgical intervention is indicated at the earliest possible moment. It was attempted in one of the cases described, and a cyst the size of a fetal head was removed, but the patient soon died with symptoms of shock. Herrera Vegas and Cranwell have cured 8 patients in 18 cases, operated on by the radical procedure. But when the tumor is large, extirpation at one sitting is almost inevitably fatal. He concludes his article, which was one of the addresses at the recent interdepartmental medical congress in Uruguay, urging the necessity of impressing upon the public the increasing dangers of hydatid disease, and insisting that instruction in the appropriate prophylactic measures should be included in the routine of primary education.

New Patents.

Patents of interest to physicians, etc., September 16, 23 and 30:

709392. Suture clamp. Haydn Brown, Surbiton Hill, England.
709003. Producing soluble milk-albumin. Henry V. Dunham, New York City.
709223. Catamenial bandage. John F. James and R. M. Kippen, Melbourne, Canada.
709332. Folding stretcher or cot. John H. Koons, Lehighton, Pa.
709164. Aseptic sputum-receptacle and holder. Catherine M. Langhorne, Plainfield, N. J.
709103. Massaging device. Charles E. Mason, San Francisco.
709055. Body-brace. Philo B. Sheldon, Erie, Pa.
709367. Surgical instrument. Richard H. Simpson, Turnersville, Texas.
709058. Device for the cure of strabismus. John E. Stierle, Eau Claire, Wis.
709696. Radiant heat-bath. George Brueck, New York City.
709290. Dough cutter. George F. Zinn, Cincinnati.
709767. Bandage. Clara J. Higgins, Wanatah, Ind.
709675. Pessary. Carl Hollweg, Magdeburg-Sudgenburg, Germany.
709790. Ophthalmoscope. Emil B. Meyrowitz, New York.
710234. Vaccine container. Hamill M. Alexander, Marietta, Pa.
709978. Auriphone. Frank I. Gano, Anaconda, Mont.
710060. Capsule for medicines. Desiderius S. Kann, Weinberge, Austria-Hungary.
709922. Making cellulose esters. Harry S. Mork, Boston; A. D. Little, Brookline; and W. H. Walker, Newton, Mass.
710001. Prescription cabinet. John J. Nesmith, Warren, Pa.
710076. Hospital mattress. Dora T. Rosett, New York City.
709931. Hot-air apparatus for the human body. George W. Sawyer, Marietta, I. T.

Books Received.

Acknowledgment of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Assisted by H. R. M. Landis, M.D., Assistant Physician to the Out-

Patient Medical Department of the Jefferson Medical College Hospital. Volume III. September, 1902. Diseases of the Thorax and Its Viscera, Including the Heart, Lungs, and Blood Vessels—Dermatology and Syphilis—Diseases of the Nervous System—Obstetrics. Cloth. Pp. 431. Price, $1.50. Philadelphia and New York: Lea Brothers & Co. 1902.

DISEASES OF THE ORGANS OF RESPIRATION. A Treatise on the Etiology, Pathology, Symptoms, Diagnosis, Prognosis and Treatment of Diseases of the Lungs and Air-Passages. By Samuel West, M.A., M.D., F.R.C.P., Assistant Physician and Lecturer on the Principles and Practice of Medicine, at St. Bartholomew's Hospital. In Two Volumes. Volumes I and II. With Numerous Diagrams and Illustrations. Cloth. Pp. 913. Price, $10.00. London: Charles Griffin & Co., Ltd. Philadelphia: J. B. Lippincott Co. 1902.

PHYSICAL DIAGNOSIS. Diseases of the Thoracic and Abdominal Organs. A Manual for Students and Physicians. By Egbert Lefevre, M.D., Professor of Clinical Medicine and Associate Professor of Therapeutics in the University and Bellevue Hospital Medical College. Illustrated with 74 Engravings and 12 Monochrome Plates. Cloth. Pp. 448. Price, $2.25. Philadelphia and New York: Lea Brothers & Co. 1902.

THE DISEASES OF INFANCY AND CHILDHOOD. For the Use of Students and Practitioners of Medicine. By L. Emmett Holt, M.D., LL.D., Professor of Diseases of Children in the College of Physicians and Surgeons (Columbia University), New York. With 225 Illustrations, Including 9 Colored Plates. Second Edition, Revised and Enlarged. Cloth. Pp. 1161. Price, $6.00. New York: D. Appleton & Co. 1902.

KIRK'S HANDBOOK OF PHYSIOLOGY. Revised by William H. Rockwell, Jr., M.D., and Charles L. Dana, A.M., M.D., Professor of Diseases of the Nervous System, Cornell University Medical College, New York. Seventeenth American Edition. With Upwards of 500 Illustrations, Including Many in Colors. Cloth. Pp. 854. Price, $3.00. New York: Wm. Wood & Co. 1902.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. Norman Broomell, D.D.S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics in the Pennsylvania College of Dental Surgery, Philadelphia. Second Edition, Revised and Enlarged, with 337 Illustrations. Cloth. Pp. 500. Price, $4.50 net. Philadelphia: P. Blakiston's Son & Co. 1902.

A GUIDE TO THE PRACTICAL EXAMINATION OF THE URINE. For the Use of Physicians and Students. By James Tyson, M.D., Professor of Medicine in the University of Pennsylvania. Tenth Edition, Revised and Corrected, with a Colored Plate and Wood Engravings. Cloth. Pp. 297. Price, $1.50. Philadelphia: P. Blakiston's Son & Co. 1902.

A TREATISE ON DISEASES OF THE ANUS, RECTUM AND PELVIC COLON. By James P. Tuttle, A.M., M.D., Professor of Rectal Surgery in the New York Polyclinic Medical School and Hospital. With 8 Colored Plates and 338 Illustrations in the Text. Cloth. Pp. 961. Price, $6.00. New York: D. Appleton & Co. 1902.

PHOTOGRAPHIC ATLAS OF THE DISEASES OF THE SKIN. By George Henry Fox, A.M., M.D., Clinical Professor of Diseases of the Skin, College of Physicians and Surgeons, N. Y. Part XVI. Philadelphia and London: J. B. Lippincott Co. 1902.

THE MEDICAL DIRECTORY OF NEW YORK, NEW JERSEY AND CONNECTICUT. Volume IV, 1902-1903. Cloth. Pp. 958. Price, $2.50. Published by the New York State Medical Association, 64 Madison Ave., New York.

THE NOSE AND THROAT IN MEDICAL HISTORY. By Jonathan Wright, M.D., Brooklyn, N. Y., 8vo. Cloth. Pp. 250. Ten Illustrations. Price, $2.00 net. St. Louis, Mo.: The Laryngoscope Co.

YEAR-BOOK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE, 1901. Cloth. Pp. 846. Washington: The Government Printing Office. 1902.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK, for the Year 1902. Cloth. Pp. 527. Published by the Society. 1902.

The Public Service.

Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., from September 26 to October 2, inclusive:

William C. Borden, major and surgeon, is relieved from duty as a member of the board of medical officers convened by Paragraph 1, Special Order No. 28, Feb. 2, 1901, from this office, for the examination of candidates for admission to the Medical Corps of the Army.

Mathew Leepere, major and surgeon, Vols., having tendered his resignation, is discharged from the service of the United States, by the Acting Secretary of War, Sept. 27, 1902.

Chas. E. Marrow, first lieutenant and asst.-surgeon, will proceed to Ft. Riley, Kan., and report in person to Major-General John C. Bates, for temporary duty in connection with the military maneuvers at that post, and on the completion of this duty will return to his proper station at Ft. Sheridan, Ill.

John L. Phillips, major and surgeon, is relieved from further duty in the Division of the Philippines, and will proceed to San Francisco, on the first available transport, and on arrival will report by telegraph to the adjutant-general of the Army for orders.

Frederick F. Russell, first lieutenant and asst.-surgeon, is granted leave of absence for three months, to take effect Oct. 1, 1902.

Thomas L. Rhoads, first lieutenant and asst.-surgeon, will, upon the expiration of his present leave of absence, proceed to San Francisco, Cal., and report in person to the commanding general, Department of California, for assignment to duty at the U. S. General Hospital at that place.

Henry S. Turrill, lieut.-col. and deputy surgeon-general, is relieved from duty as chief surgeon, Department of the Missouri, and will proceed to New York City, and assume charge of the medical supply depot in that city during the absence of Colonel Justus M. Brown, assistant surgeon-general, on leave granted him in Paragraph 15, Special Order No. 218, Headquarters of the Army.

Wilfred Turnbull, first lieutenant and asst.-surgeon, is relieved from further duty in the Division of the Philippines, and will proceed to San Francisco, Cal., and upon arrival will report by telegraph to the adjutant-general of the Army for orders.

Navy Changes.

Changes in the Medical Corps of the Navy, Oct. 4, 1902:

P. A. Surgeon F. E. McCullough, detached from the naval hospital, Mare Island, Cal., and ordered to the *Alert*.

P. A. Surgeon J. C. Pryor, detached from the *Massachusetts* and ordered to the *Bancroft*.

P. A. Surgeon J. F. Leys, detached from the naval hospital, Newport, R. I., and ordered to the *Supply*.

P. A. Surgeon F. C. Cook, detached from the *Supply* and ordered to the naval hospital, Newport, R. I.

P. A. Surgeon E. V. Armstrong, placed on the retired list Sept. 27, 1902.

The following-named officers were detached from the *Solace* and ordered home and to wait orders. P. A. Surgeon A. R. Alfred, P. A. Surgeon C. P. Bagg, P. A. Surgeon M. K. Johnson, and Asst.-Surgeon H. E. Odell.

Surgeon H. L. Law, retired, ordered to the naval recruiting rendezvous, Boston.

A. A. Surgeon J. H. Holloway, appointed asst.-surgeon Sept 27, 1902, with rank of lieutenant (junior grade).

Marine-Hospital Changes.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Oct. 2, 1902:

Surgeon G. W. Stoner, Bureau letter of Sept. 11, 1902, granting leave of absence for 15 days amended so that said leave shall be for 14 days.

Surgeon S. D. Brooks, leave of absence for 15 days from September 27, granted by Bureau letter of September 20, amended so that it shall commence September 29.

Surgeon J. O. Cobb, granted leave of absence for two months from Oct. 8, 1902, on account of sickness.

P. A. Surgeon Hill Hastings, granted extension of leave of absence for two months and 26 days from October 3.

Asst.-Surgeon V. G. Heiser, relieved from duty as immigrant inspector in Canada and directed to visit different points between the United States and Canada to institute a system whereby uniformity in medical inspection of alien immigrants bound for ports in the United States can be assured.

Asst.-Surgeon B. S. Warren, granted leave of absence for 14 days from September 29.

A. A. Surgeon Francis Duffy, leave of absence for six days granted by Bureau letter of August 22, revoked.

Senior Pharmacist E. B. Scott, Department letter granting leave of absence for 19 days from September 6, amended so that said leave shall date from September 16.

RESIGNATION.

P. A. Surgeon Hill Hastings, resigned, to take effect Dec. 29, 1902.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Oct. 4, 1902:

SMALLPOX—UNITED STATES.

Delaware: Sussex County, Sept. 1-26, 7 cases.
Illinois: Freeport, Sept. 20-27, 2 cases.
Indiana: Sept. 20-27, Indianapolis, 2 cases; South Bend, 2 cases.
Kansas: Wichita, Sept. 20-27, 3 cases.
Massachusetts: Chelsea, Sept. 20-27, 1 case.
Michigan: Grand Rapids, Sept. 13-20, 1 case.
Montana: Butte, Sept. 20-28, 1 case.
New Hampshire: Nashua, Sept. 20-27, 13 cases, 1 death.
New Jersey: Newark, Sept. 20-27, 3 cases.
New York: New York, Sept. 20-27, 5 cases, 1 death.
Ohio: Cleveland, Sept. 20-27, 79 cases, 17 deaths.
Pennsylvania: Sept. 20-27, Erie, 1 case; McKeesport, 14 cases, 2 deaths; Pittsburg, 7 cases, 7 deaths.
South Carolina: Charleston, Sept. 20-27, 1 case.
Wisconsin: Green Bay, Sept. 20-28, 1 case.

SMALLPOX—FOREIGN.

Barbadoes: Aug. 31-Sept. 15, 226 cases, 11 deaths.
Canada: Amherstburg, Sept. 20-27, 1 case.
Great Britain: Dundee, Sept. 13-20, 1 case; Liverpool, Sept. 13-20, 3 cases; London, Sept. 6-13, 7 cases, 2 deaths; Sunderland, Sept. 6-13, 4 cases.
Italy: Sept. 6-13, Naples, 1 case; Palermo, 10 cases, 1 death.
Mexico: Mexico, Sept. 14-21, 1 death.
Russia: St. Petersburg, Aug. 30-Sept. 13, 18 cases, 9 deaths.
Straits Settlements: Singapore, Aug. 2-16, 1 case, 1 death.

YELLOW FEVER.

Colombia: Panama, Sept. 15-22, 3 cases, 1 death.
Cuba: Havana, Sept. 19, 1 case removed from S. S. *Havana* from Mexican ports.
Mexico: Coatzacoalcos, Sept. 13-20, 1 case, 1 death; Mexico, Sept. 14-21, 2 cases; Tampico, Sept. 26, 1 death.

CHOLERA—FOREIGN.

China: Hongkong, Aug. 9-16, 21 cases, 19 deaths.
India: Calcutta, Aug. 23-30, 11 deaths.
Japan: Osaka and Hiogo, Aug. 30-Sept. 6, 17 cases, 18 deaths.
Java: Batavia, Aug. 15-23, 38 cases, 35 deaths.
Straits Settlements: Singapore, Aug. 2-16, 55 cases, 55 deaths.

PLAGUE—UNITED STATES.

California: San Francisco, Sept. 11, 1 case, 1 death; Sept. 16, 1 case, 1 death.

PLAGUE—FOREIGN.

China: Hongkong, Aug. 9-16, 12 cases, 12 deaths.
India: Calcutta, Aug. 23-30, 24 deaths.

Recently-Issued Medical Books

Morris.—Text-Book of Anatomy. 3d Ed. 846 Illus.; 267 colored. Octavo. Cl., $6.00 *net.*

Chase.—General Paresis. 12mo. Illustrated. Cl., $1.75 *net.*

Tyson.—Guide to the Examination of Urine. 10th Ed., Rev. Illus. 12mo. Cl., $1.50 *net.*

Davis.—Principles and Practice of Bandaging. 2d Ed., Rev. Illus. 8vo. Cl., $1.50 *net.*

Hewlett.—Manual of Bacteriology. 2d Ed., Rev. 8vo. Cl., $4.00 *net.*

Thorne.—Schott Methods of the Treatment of Chronic Diseases of the Heart. 4th Ed., Rev. Illus. 8vo. Cl., $2.00 *net.*

Hemmeter.—Diseases of the Stomach. 3d Ed., Rev. Illus. Octavo. Cl., $6.00 *net.*

Hemmeter.—Diseases of the Intestines. Illus. Octavo. *Two volumes.* Each, Cl., $5.00 *net.*

Murray.—Rough Notes on Remedies. 4th Ed. Enl. 16mo. Cl., $1.25 *net.*

Heath.—Clinical Lectures on Surgical Subjects. 2d Series. 16mo. Cl., $2.00 *net.*

Schofield.—Force of Mind: Mental Factor in Medicine. 12mo. Cl., $2.00 *net.*

Rosenau.—Disinfection and Disinfectants. 12mo. Illus. Cl., $2.00 *net.*

Broomell.—Anatomy and Histology of Mouth and Teeth. 2d Ed., Rev. Illus. 8vo. Cl., $4.50 *net.*

Ostrom.—Massage and Original Swedish Movements. 5th Ed. Illus. 12mo. Cl., $1.00 *net.*

Bunge.—Physiological and Pathological Chemistry. From 4th German Edition. 8vo. Cl., $3. *net.*

Jacobson and Steward.—Operations of Surgery. 4th Ed., Rev. Illus. Octavo. *Two volumes.* Cl., $10.00 *net.*

Hughes and Keith.—Dissections. Illus. Octavo. Complete in 3 parts. Each, Cl., $3.00 *net.*

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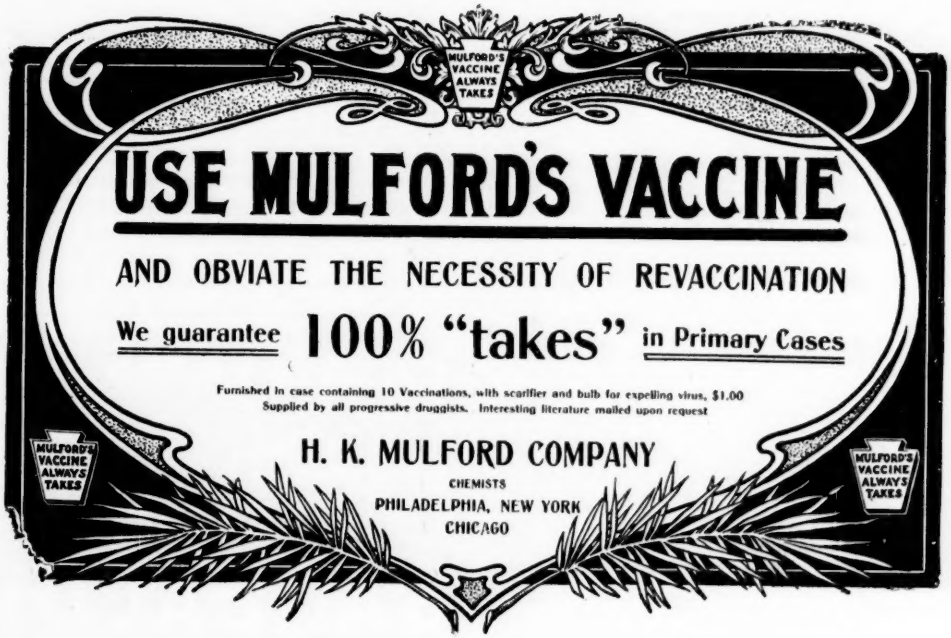
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